THE ROLE OF EFOMP IN THE EDUCATION AND TRAINING OF MEDICAL PHYSICISTS AND HEALTH PROFESSIONALS IN RADIATION PROTECTION THROUGH NATIONAL AND INTERNATIONAL NETWORKS

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European Federation of Organisations for Medical Physics
York, UK.

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EFOMP is a Federation of independent Organisations of Medical Physics in Europe. These are the members of the Federation. # of votes each NMO has is pro-rata size of membership.

Recently re-constituted as a legal entity (company limited by guarantee)

Decision making body is Council. Policy is effected through Policy Statements

The European Federation of Organisations for Medical Physics

Members, 2009

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Finland
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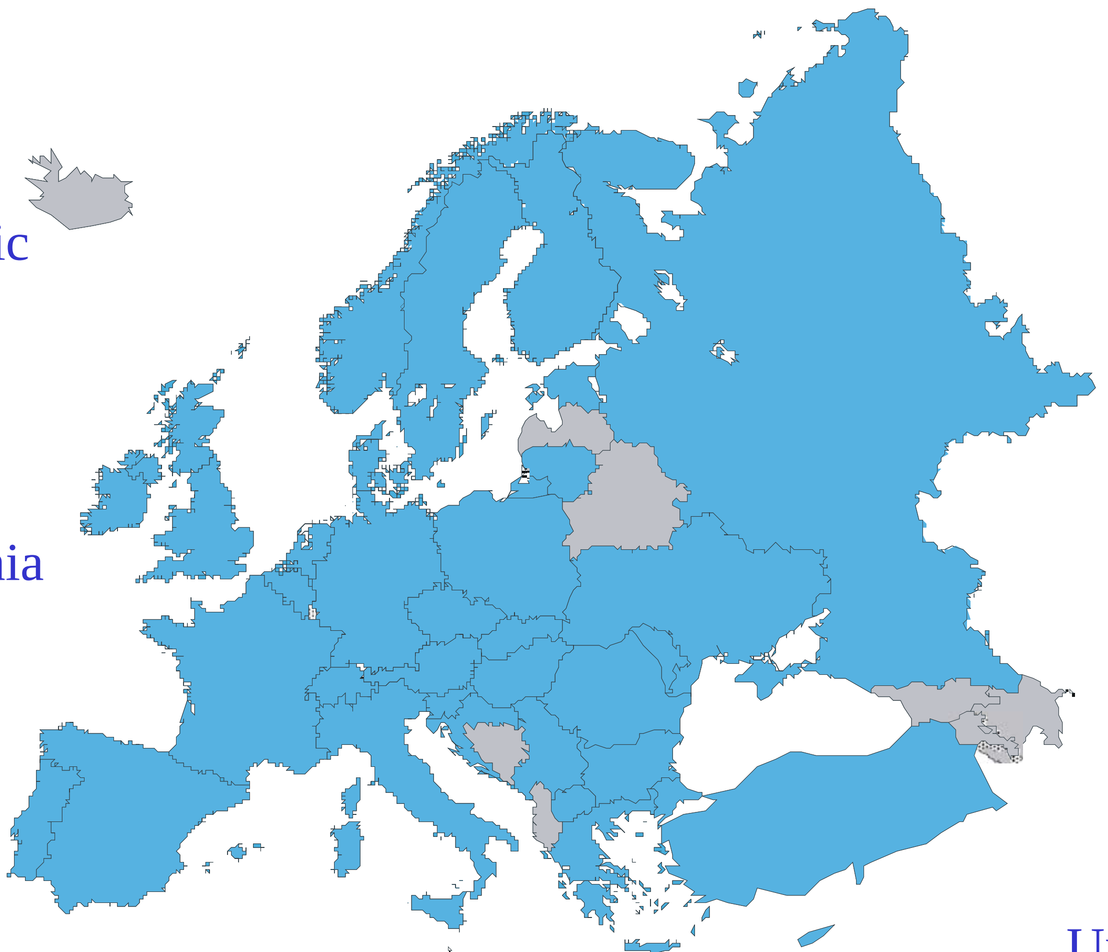

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Spain
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United Kingdom

35 NMOs

EFOMP

Introduction

Need for European wide recognition of Training and Education of Medical Physicists :

- Directives from European Commission (RPE, QMP, MPE, RPA etc.)
- Bologna Declaration
- Requirement for mutual recognition (mobility)

”Revised” EFOMP recommendations on Education, Training and CPD of Medical Physicists *(2008)*

5 years — ***University*** →

Basic Education: **Level of degree**
Physical Science, Engineering or equivalent
3 - 4 years (180 - 240 ECTS)
Postgraduate Education: Level of Master
Master on Medical Physics
1 - 2 years (up to 300 ECTS)

\+

2 years — ***Hospital (On-the-job training)*** ←

Postgraduate Training:
Practical Part: min. 2 years’ professional work

7 years → **Registration as Qualified Medical Physicist**

Special Courses, Workshops, Congresses etc., Self-directed learning

Continuing Professional Development:
5- year cycle
Credit point system

Registration as Specialist Medical Physicist
[eq. *Medical Physics Expert*]

Educational pathway for medical physicists (EFOMP PS12)

2. Tuning of post-graduate programs

Tuning is a University driven process to "re-design, develop, implement and evaluate study programs for each of the Bologna cycles"

Tuning promotes 'points of reference' (which are essential for a system of easily comparable, compatible and transparent degrees) *whilst encouraging diversity in curricular delivery methods and learning paths according to the principle of autonomy and local culture and conditions.*

'Points of Reference' for the Masters in Medical Physics are sets of learning outcomes . Learning outcomes for clinical skills obtained during clinical training would be another. These learning outcomes should be stated in terms of an inventory representing the minimum set and level of competencies that a student should be acquired.

Competencies refer to knowledge and understanding of learner, interpersonal, intellectual and practical skills, ethical values and attitudes.

Tuning recognizes two types of competences:

- Generic (means transferable across disciplines)
- Subject Specific (applicable to a particular discipline).

Generic competences can be split in three :

1. instrumental competences (cognitive abilities, methodological abilities, technological abilities and linguistic abilities);

2. interpersonal competences (individual abilities like social skills (social interaction and co-operation);

3. systemic competences (abilities and skills concerning whole systems, combination of understanding, sensibility and knowledge)

Radiation Protection is but one aspect of Health, Safety and Risk management in the hospital environment.

EFOMP is of the opinion that medical physicists by virtue of their training and experience are well positioned to advise hospital staff and management on health and safety issues. To provide a minimum standard of education as part of the tuning process, EFOMP recommends that formal Risk and Safety training is part of the curriculum of the education of medical physicists.

This will of course immediately be applicable to radiation protection in the health care environment.

<u>Risk and Safety Management course</u> as provided in the School of Medical Physics and Engineering of the Department of Applied Physics in Eindhoven University of Technology in the Netherlands. Course equivalence is 6 ECTS.

Basic knowledge

* Basic principles of safety and human failures
* Risk analysis skills
* Risk identification and estimation
* Incident analysis, accident analysis
* Work processes and design: analysis skills
* Electrical safety
* Safety care and management tools for a learning organization

Practical training

* Risk analysis.
* Discussion of safety with (medical) colleagues.
* Practical application of risk analysis skills in the own institute

Learning Outcomes

* The trainee knows what safety is.
* The trainee knows what risk analyses are.
* The trainee knows how to relate safety and risk analyses to his daily activities.
* The trainee has attention for his own professional safety attitude and that of other medical professionals.
* The trainee knows different risk analysis methods and their (dis)advantages.
  • The trainee knows which risk analysis methods apply to the clinical environment.
  • The trainee knows the PRISMA method, often applied by the inspection of health care.
* The trainee is able to judge which risk analysis method applies to a distinct situation and is able to consider a detailed risk analysis or a pragmatic approach.
* The trainee knows what a safety management system (SMS) is and can apply SMS to medical technology.
* The trainee is capable of adequately applying insights from the course to a concrete medical physics subject.

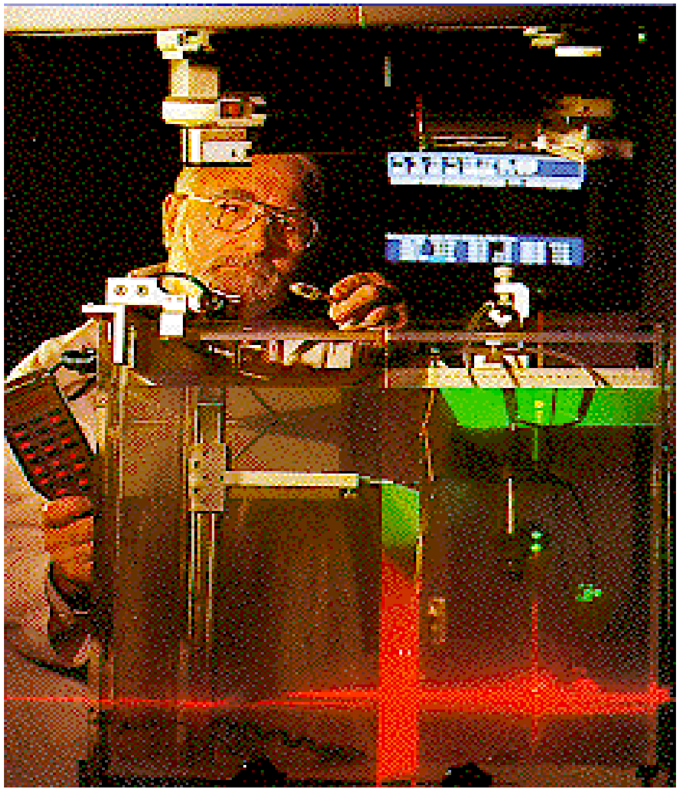
The outcome of the tuning process will be a set of teaching and training syllabi for use throughout Europe which will ensure compatibility of education standards.

This will greatly assist mobility but, more importantly, also increase professional standards.

"Our standards are very high. We even have high double standards."

3. Clinical Training

Medical Physicists work in a clinical environment as a member of a multidisciplinary team. Clinical work requires skills over and above the theoretical knowledge obtained in the MSc program. Training through a structured development of skills is required in the hospital environment.



Development of clinical standards for medical physics practice is considerably more complicated than the “tuning” process of the university education.

This is due to :

- Differences in Practice and Status
- Lack of agreement on duration of training
    - Training is often part of a formal registration process which is now a legal requirement in order to practice in a number of countries in Europe.
- Different training models have been adopted across Europe.

Development of training is driven through professional organisations and NMOs.

ELSEVIER
Radiotherapy and Oncology 70 (2004) 125–135
RADIOTHERAPY & ONCOLOGY
JOURNAL OF THE EUROPEAN SOCIETY FOR THERAPEUTIC RADIOLOGY AND ONCOLOGY
www.elsevier.com/locate/radonline

Guidelines for education and training of medical physicists in radiotherapy Recommendations from an ESTRO/EFOMP working group

Teresa Eudaldo[a,*], Henk Huizenga[b], Inger-Lena Lamm[c], Alan McKenzie[d], Franco Milano[e], Wolfgang Schlegel[f], David Thwaites[g], Germaine Heeren[h]

Similar syllabii are in preparation in collaboration with ESR (Diagnostic Radiology) and EANM (Nuclear Medicine)

Guidelines for education and training of medical physicists in radiology

Recommendations from an EFOMP/ESR working group.

Jacob Geleijns
Alfonso Calzado
John Damilakis
Philip Dendy
Anthony Evans
Keith Faulkner
Alain Noel
Renato Padovani
Lothar Schad
Ronnie Wirestam

ESR contact E. Breatnach
EFOMP contact Teresa Eudaldo
Project manager Wendy Krispijn

cc: Wil van der Putten

Although useful, these syllabi/standards have not been adopted universally in Europe. EFOMP considers the need to work towards European standards for clinical training very important.

This will –more than likely- involve the adoption of minimum standards of clinical competence incorporating the syllabi but also the validation processes of such competences.

These standards will more than likely be met by those NMO members of EFOMP with an existing registration scheme.

Such a set of standards then will allow EFOMP to accredit training in those countries who are too small to have their own Registration scheme.

EXAMPLE **Radiation Safety Module Radiotherapy Training Scheme Ireland**

1. Orientation to radiation safety including induction in local radiation safety procedures and study of Local Rules for Radiation Safety
2. Review the EU and National regulations
3. Participate in the licensing/license renewal process & including review of the licensing conditions and schedules
4. Review and understand the incident reporting procedures
5. Review and understand the requirements for staff education and documentation. Participate in staff education sessions
6. Review the quarterly staff badge reports with the radiation protection advisor or radiation safety officer
7. Perform a fetal dose calculation
8. Perform a leak test for the receipt of a radioisotope
9. Prepare a list of the documents required for a regulatory site visit.
10. Perform and document a radiation survey for :
    - a) radioisotope room
    - b) CT-Simulator Room
    - c) Cobalt Treatment room
    - d) A linear accelerator vault
    - e) Perform neutron measurements for a high energy machine.

Over and above the “Medical Physics” training, trainees should receive additional training :

Generic Skills

- Introduction into Safety and Risk Assessment;
- Psychology of cancer, patient confidentiality, ethical considerations in Cancer;
- Research experience;
- Equipment procurement.

Organisational and Communication Skills

- Attendance at meetings such as Radiotherapy Planning meetings, Multi-Disciplinary Tumour Boards, Medical Physics departmental meetings, Journal Clubs
- Team Work/Participation
- Report Writing:
- Presentations

4. Continuous Professional Development

= Maintenance of Competence

Is considered to be of critical importance by EFOMP :

Policy Statement 10 :
"Recommended Guidelines on National Schemes for Continuing Professional Development of Medical Physicists" (Physica Medica - Vol. XVII,No.2 April-June 2001)

EFOMP will NOT recognize a national registration scheme if an appropriate CPD is not in place !

Description Of The CPD Scheme -
To maintain professional competence 50 credit points of formally agreed and recorded CPD should be undertaken per annum. The CPD Scheme should be based on a 5-year cycle with a total of 250 credit points. Because circumstances vary from time to time, a five-year rolling average of 50 credit points per annum is allowed. CPD activities are classified into two categories:

Category 1 activities are attendance at pre-assessed courses, i.e. lectures, scientific meetings, workshops, refresher/training courses etc.

Category 2 activities are different types of planned and agreed self-directed learning tasks.

The credit point, cp, is the unit of CPD; 1 cp typically corresponds to one full hour of educational activity in Category 1. Since category 2 activities are diverse in character, there is no similar simple equivalence between credit points and hours spent.

In order to ensure a well-balanced CPD over the five-year period, the total of 250 cp should be earned on the basis of about 50 cp per year. The 250 cp must be achieved as a mixture of Category 1 and 2 activities as prescribed below.

Category 1 Credit Points:
Category 1 points are awarded for attendance at courses that have been accredited by a national, international or professional organisation.

A total of 100-150 cp of Category 1 is recommended per 5-year cycle. (This corresponds roughly to attending a 2-day meeting twice a year.).

Category 2 Credit Points –
Category 2 activities are different types of planned and agreed self-directed learning tasks. Since category 2 activities are diverse in character, there is no simple equivalence between credit points and hours spent. The number of credit points allowed for an activity may be determined by the extent or level of contribution made by the participant.

- Formal local hospital educational activities, e.g., attendance at lectures, seminars, regular organised teaching activities: 1 cp per full lecture-hour or per meeting.
- Formal on the job training activities and experiences, e.g., development of interpersonal skills, time management etc. Up to 10 cp per year.
- Planned self-directed learning, e.g., reading of textbooks, journals etc., including computer-based 'distance learning facilities': up to 10 cp per year.
- Preparation and delivery of formal lecture or seminar: up to 10 cp for the first time presentation and 3 cp for a repeated presentation.

Table 1. Example of accreditated events by EFOMP in 2009

Year	Institution	Name of the event	City	Date	Code	Accredit. hours
2009	DFM_SPF (Divisão de Física Médica da Sociedade Portuguesa de Física)	Where is Portugal in the Medical Physics World?	Aveiro, Portugal	8-9 May 2009	WS0001/ 2009	9
2009	APSM (Association of Physical Scientists in Medicine)	APSM Annual Scientific Meeting 2009 -Congress	Kilkenny, Ireland	27th Feb.	CG0001/ 2009	6
2009	Dep. of Med..Physics, University of Silesia, Katowice, Poland	Workshop and Tutorial „ "Magnetic Resonance Imaging and Spectroscopy"	Szczyrk, Poland	15th June	WS0002/ 2009	8
2009	Heidelberg University, Dep. Postgrad. Studies in cooperation with German Cancer Research Center Heidelberg , Germany	9th Teaching Course on IMRT/IGRT	Heidelberg, Germany	2nd – 4th July	WS0003/ 2009	15
2009	Holycross Cancer Center , Kielce, Poland	Workshop "IV School of Radiotherapy"	Kielce, Poland	22nd –25th June	WS0004/ 2009	19
2009	Mater Misericor-diae University Hospital , Dublin	2009 Radiation Protection Autumn Workshop	Dublin, Ireland	2nd Sept.	WS0005/ 2009	5

Conclusion on C.P.D. scheme :

C.P.D. scheme is very successful and has been widely adopted

Future development will need to focus on audit.

5. European Network of Medical Physics Schools

Art. 1.

The ENMPS is an EFOMP initiative in collaboration with National Members Organisations (NMOs) and other European and International Organisations (ESR, ESTRO, EANM, IAEA, WHO, etc).

Art. 2. Scope of ENMPS

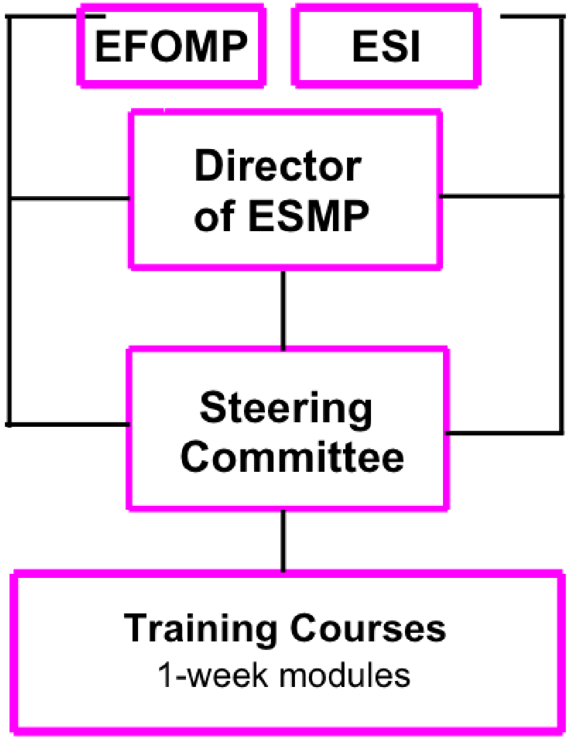
The scope of the ENMPS is:

(i) to create a network linking the initiatives undertaken by NMOs in their own countries for the continuing education of Medical Physicists (MPs);
(ii) to exchange scientific knowledge and experience between MPs across Europe;
(iii) to offer advanced continuing education to MPs across Europe;
(iv) to offer educational events to small countries and to countries where Medical Physics is in a developing stage.

Example: European School of Medical Physics

Centre Universitaire et de Recherche d'Archamps *French Geneva Campus*

Organisation of ESMP



6 weeks, imaging, radiotherapy, medical computing

Since 2008 additional full week devoted to Radiation Protection

6. Radiation Protection for other Health Professionals

A significant amount of a medical physicist's work is related to the education and training of fellow health professionals in Radiation Protection.

EFOMP is establishing a Special Interest Group to define curricula for this and also look at innovative ways of teaching.


Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

CERTIFICATE
OF
ATTENDANCE

Ms Catriona DeCourcey

awarded in recognition of professional achievement in successfully completing a course

on

Radiation Protection for Non-Radiology Doctors & Healthcare Professionals

Organised by

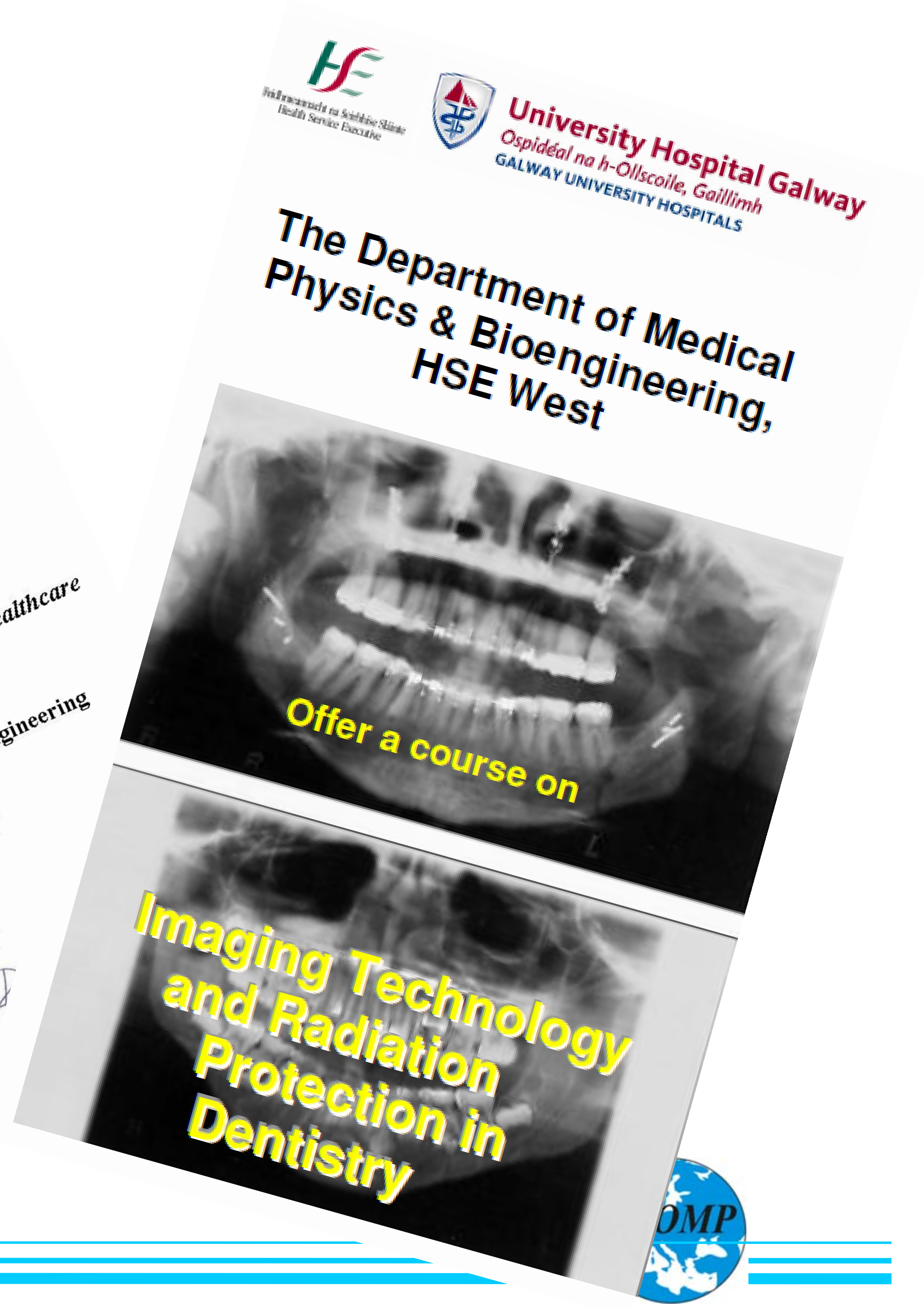
The Department of Medical Physics and Bioengineering

in conjunction with

The Department of Radiology

Friday, 17th July 2009
...iversity Hospital Galway

Prof. Wil van der Putten
Radiation Protection Advisor
HSE WEST, UHG



There is a clear need for education !

23 year old, fair skinned male 5 ft 8 inchs (172 cm) and 255 pounds (116 kg) {18.2 stone} IVC filter removal under fluoroscopic guidance. The approach was with the patient supine and a lateral view was used. After 1.1 hour of “beam-on” the case was aborted due to a failed recovery.

One month later repeat, for 4 hours and delivered approximately 10 Gy Air Kerma (est skin dose 15 Gy). This lesion is on the right flank even with the lower ribs. It turned red the same day, opened up at 6 weeks, then healed over and reopened at 13 weeks post-irradiation. It has remained open for several months.

A 52-year-old man underwent an ablative procedure for supraventricular arrhythmias, and a painful ulceration developed on the posterior surface of his right arm four months later. His arm had accidentally been positioned within the radiation field during the 10-hour procedure. The estimated dose of radiation was in the range of 1500 to 2000 cGy. After plastic surgery, the patient's ulceration healed, and his pain resolved.

Lesley Wong, Jason Rehm, NEJM, Volume 350:e23 Number 25, 2004

7. Conclusion

EFOMP is pro-active in developing European wide standards for medical physics education, training as well as practice development.

- MSc “tuning”
- Standards for clinical skills and training
- European wide professional recognition
- Continuous professional development
- Education and training

Radiation Protection is an integral and essential part of all these activities.

The EFOMP method of working could be a model for the development of European wide standards for Radiation Protection.

This could be the prototype for the EUTERP successor.

EFOMP would be happy to work towards this.

Thank you !


wil.vanderputten@hse.ie

8. References

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[5] EFOMP. Recommended guidelines of National Registration Schemes for Medical Physicists EFOMP Policy Statement No.6. Physica Medica 1995; XI (4); 157-159

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