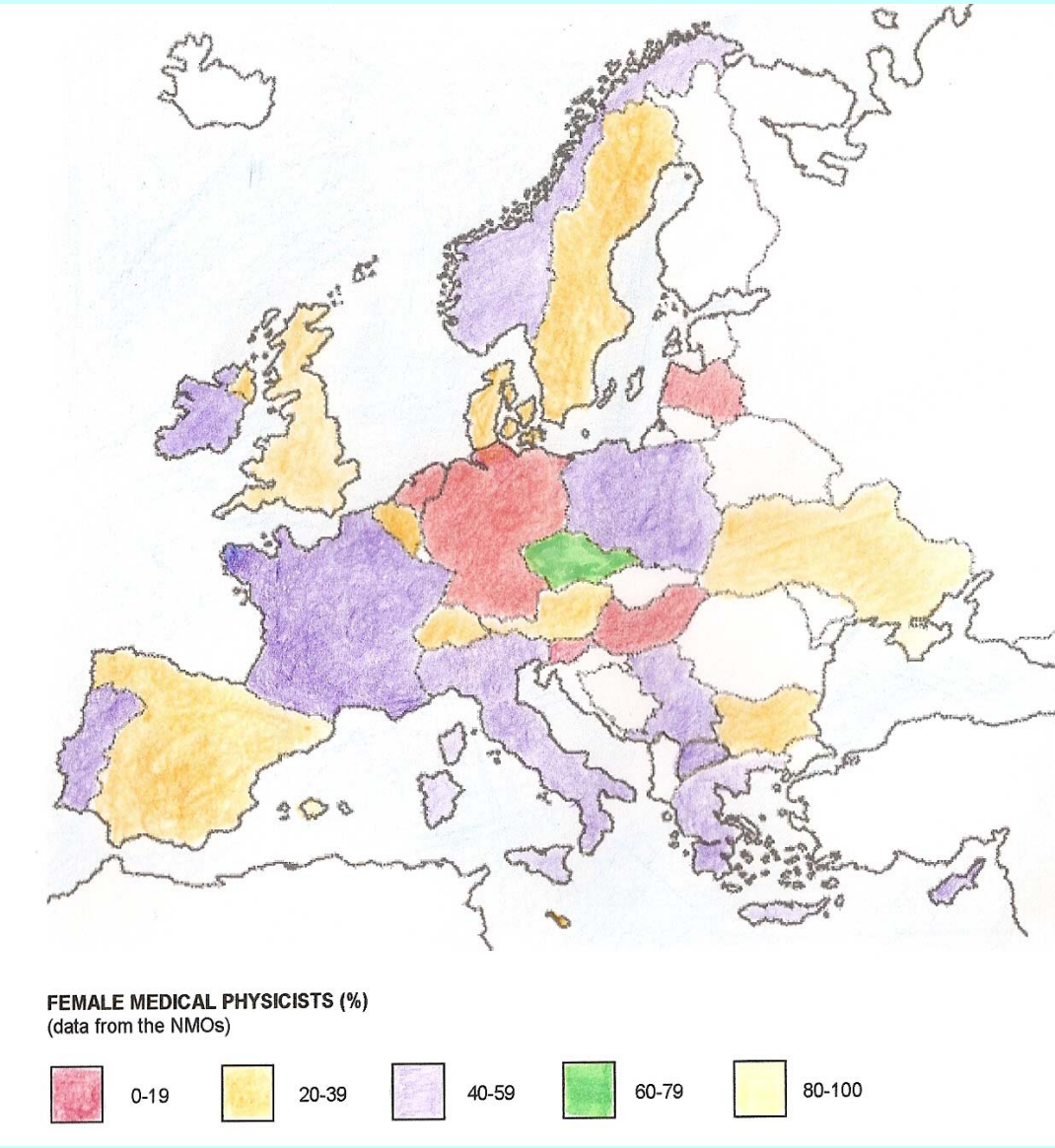
European Medical Physics News

Winter 2008

Contents:

Women in Medical Physics in Europe



What is the fraction of female Medical Physicists and Engineers in Europe?
First overview of the European results of a global survey initiated by Cari Borrás at an AAPM symposium 2008.

More to come!

Editorial

Dear EFOMP Members,
Time is flying by and it has been almost half a year since the last newsletter arrived in your mail boxes. This issue is trying something new – we start a series on threads we think are interesting to our community. With an article on Bio-Medical Physics' education for healthcare professions we hope to kick off a discussion on the very definition of our own profession. The Bologna Process is finally getting hold of our universities – with, depending on the country you live in, possibly serious consequences to what we know in the (Bio-) Medical Physics world. With the Bachelor being the first academic degree Europe-wide, administrators in their eternal quest to save money could try to shift Medical Physics responsibilities to this very first academic degree – subsequently installing technologists as Medical Physics Experts. Without being condescending we should be ready for this scenario by putting together a list of requirements as must-have prerequisites for an MPE.
Those of you who missed the Radiation Protection workshop at the 2-nd European Conference on Medical Physics in Krakow and or the ICMP 2008 in Dubai get an update of both in the two reports on page 10 and 15. At this point a big thank you again to our Polish colleagues for the organization of our second European meeting (cf. page 11).
Our colleague Nuria Jornet has interviewed Cari Borrás, the chair of the IOMP Scientific Committee. This might be the start to introduce the people behind Medical Physics. We hope to present you your colleagues in a loose sequence over the next issues of our newsletter.
With the growing trend of splitting up Medical Physics departments and Medical Physicists working in pure medical hierarchies 'line-functions' we plan to start another series to keep us up-to-date with the basics and developments in our respective specializations.
Along those lines goes the article on the Euratom Project on Dental Cone Beam CT by Keith Horner on page 5 proving, by the way, once more the importance of qualified experts in the field of Medical Physics, what closes this issue with what it began.

Have you had a look at the map on the title page? It took us a long way to compile those gender data. There might be surprising to some of you or perhaps you just see confirmed your gut feeling. But evident to everybody is the fact that the map is incomplete - therefore please: the NMO's not represented yet send us your data! It's Christmas after all and we can make a wish...

With X-mas in full swing – at least in shopping malls and wherever they want you to buy things - we too wish you a Merry Christmas – and a Happy New Year.

The Editorial team

Ceterum Censeo ....

Acting as a(n editorial) team is always good. Even better does it work if somebody takes the lead, relying on the team. At this point the latter wants to thank Markus Buchgeister for this very lead and his long service to the Medical Physics community, particularly to EFOMP as Chair of the Communication and Publication Committee for the last 6 years. He basically formed and pushed the style of and the infrastructure behind almost everything you see as the face of EFOMP; be it the Newsletter, the maintanace of the website, the flyers and many more.
Stepping down as a chair doesn't mean stepping down from being needed.
Markus, keep on rocking - with us!

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EFOMP Special Interest Group (SIG): Biomedical physics education for the healthcare professions

The role of biomedical physicists in the education of the *non-physics* healthcare professions (e.g., physicians, radiographers, physiotherapists) is becoming progressively more important in particular owing to the rapid increase in the number and sophistication of medical and biophysical devices used by these professions. In 2005, the EFOMP council took the decision to set up an SIG to develop this aspect of the role of the biomedical physicist and enhance its relevance to modern medical and healthcare professional education. This communication introduces the group, presents a background to the project, summarises a literature review regarding the role recently authored by the group and indicates future research directions.

The group

The members of the group are presented in the table below. The members represent medical physicists from most regions of the EU and a judicious mix of physicists who are working or have worked in either academic and / or hospital based medical physics departments. This ensures a pan-European perspective, representation of the various categories of stakeholders from within the profession and the right balance between theory and practice.

Background to the project

A scrutiny of the medical and healthcare professional literature provides relatively few references on the educational role of the biomedical physicist in Faculties of Medicine / Health Science. Current curricular content varies tremendously across Europe. For example that for physicians ranges from general physics to physical biochemistry, biomolecular and cellular biophysics, physiological physics, the effects of physical agents on the human organism and medical devices. There are various causes for this variability: remits presented by healthcare professionals are frequently vague, choice of curriculum content by biomedical physicists often

Member Name	Institution(s)
C.J. Caruana (Coordinator)	University of Malta, EFOMP
M. Wasilewska-Radwanska	AGH University of Science and Technology, Krakow, Poland, EFOMP
A. Aurengo	Faculty of Medicine, University Pierre et Marie Curie, Paris, France
P.P. Dendy	Formerly, Faculty of Chemistry and Physics, and Faculty of Medicine, Cambridge University, Cambridge, England
V. Karenauskaite	Faculty of Physics, Vilnius University, Vilnius, Lithuania
M.R. Malisan	University Hospital, University of Udine, Udine, Italy
J.H. Meijer	VU University Medical Center, Amsterdam, Netherlands
V. Mornstein	Faculty of Medicine, Masaryk University, Brno, Czech Republic
E. Rokita	Faculty of Medicine, Jagiellonian University, Krakow, Poland
E. Vano	Faculty of Medicine, Complutense University, Madrid, Spain
M. Wucherer	Klinikum Nuremberg, Nuremberg, Germany

subjective, and research-based curriculum development and international coordination have been lacking. At the same time, the Bologna process in Europe is encouraging universities to take a critical look at their curricula and to ensure that these are in agreement with the present and future learning needs of the professions. Physics educators cannot play a significant role in this process unless they have an updated role mission statement and a research based curriculum development model.

Summary of the literature review regarding the role

Almost all articles found in the literature focus on the role within programmes for physicians, diagnostic radiographers / radiation therapists and the postgraduate medical specializations of radiology, radiotherapy, interventional radiology and cardiology. There are very few articles regarding the physics component of medical curricula even though it is a component of many medical programmes. The only work that has been described in detail is that of J. K. Robertson, teaching at the Queen's University Faculty of Medicine, Canada in the years 1909-1951. The pedagogical approach of this educator demonstrates the remarkable vision of some early medical physics educators. At that time the medical curriculum was very linearly structured with strict separation of basic and applied science. Robertson challenged this system and produced a very successful course which combined physics principles with clinical applications in a single unit. In 2005, a survey of the physics component of European undergraduate medical curricula was carried out. In a subsequent paper the same authors developed an initial biomedical physics learning outcomes inventory for undergraduate medical education in Europe. Physics has been included in the curriculum for diagnostic radiographers since the beginning of formal radiography education. However, the first research-based inventory of physics competence for diagnostic radiography education in Europe was only published recently. Physicists have always been involved in international initiatives for the development of resources for radiation protection education. Physicists are presently involved in an International Commission for Radiation Protection (www.icrp.org) group working on a document entitled 'Radiation protection training for diagnostic and interventional procedures' to be published in 2009. Physics has always been a component of the curriculum of the postgraduate medical specializations of radiology and radiotherapy. It has been argued that owing to the pressures on radiologists' learning time only physics knowledge that is derived from the clinical practice should be taught. This has been countered by the argument that it is more important to use the time available to build firm broad conceptual foundations as concepts that were not seen as relevant at the time of learning could become so at a later date. A more recent debate involved a discussion on whether the rapid increase in the number of imaging modalities implies that the physics taught to radiologists would need to be expanded and become more quantitative. The arguments in favour of the proposition tended to be statements on the lines that more technology requires more physics. Arguments against the proposition were that there is simply no available curriculum time and that medical students do not tend to be mathematically inclined. Some recent experiences in the teaching of the practical aspects of radiation protection to interventional radiologists and cardiologists have been well received by clinicians. *(The full version of this literature review has been submitted for publication in Physica Medica - European Journal of Medical Physics)*

Future research directions

The literature shows that the precise role of the biomedical physics educator in Faculties of Medicine / Health Science has never been studied in a systematic manner. The SIG therefore will address the following research objectives: (a) carry out a comprehensive SWOT-based Europe-wide position audit for the role, including curricular challenges within higher and health-

World Congress 2009 in Munich:

New Research Track at Theme 12 "Biomedical Physics Education for the Medical / Healthcare Professions and the General Public"

The track chairs Stelios Christofides and Carmel J. Caruana welcome contributions in this new area for research in medical physics.

care professional education, (b) propose a strategic plan for the development of the role and (c) propose a curriculum development model which would be structured enough for systematic curriculum development yet generic enough to be applicable to all the medical / healthcare professions and easily modifiable to national and local needs.

Interested in the work of the group? Please contact the coordinator (carmel.j.caruana@um.edu.mt)

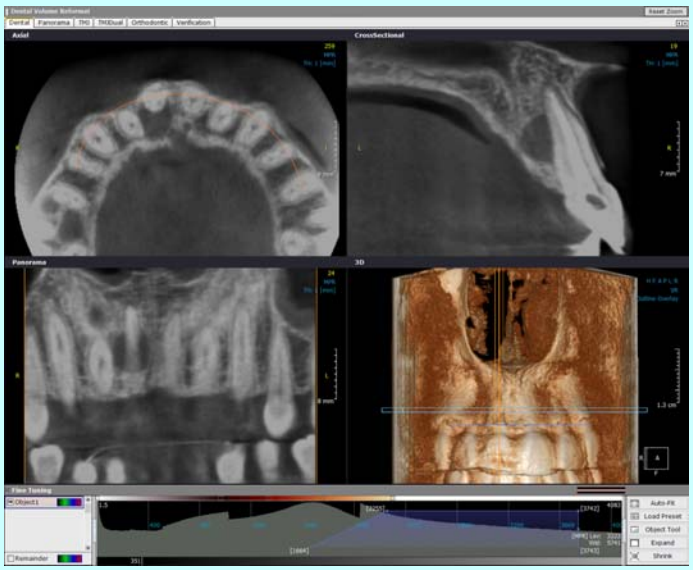
Definitions used in the article:

Biomedical physics: the use of physics concepts, theories and methods for the greater understanding and development of clinical practice and *experimental medicine*. This is a wider definition than clinical medical physics and would include physics based aspects of life science research which would have a future impact on clinical practice (e.g., microscopy, nanodevices, spectrometry). At a more mundane level the term is also used in our research to allow for the fact that most departments in Europe within medical / health science faculties are called either 'medical physics' or 'biophysics' or some combination of both terms. By 'biomedical physics department' we include any entity whether in a faculty of medicine / health science or otherwise (e.g., department of physics in a faculty of science, hospital based medical physics department) providing such services.

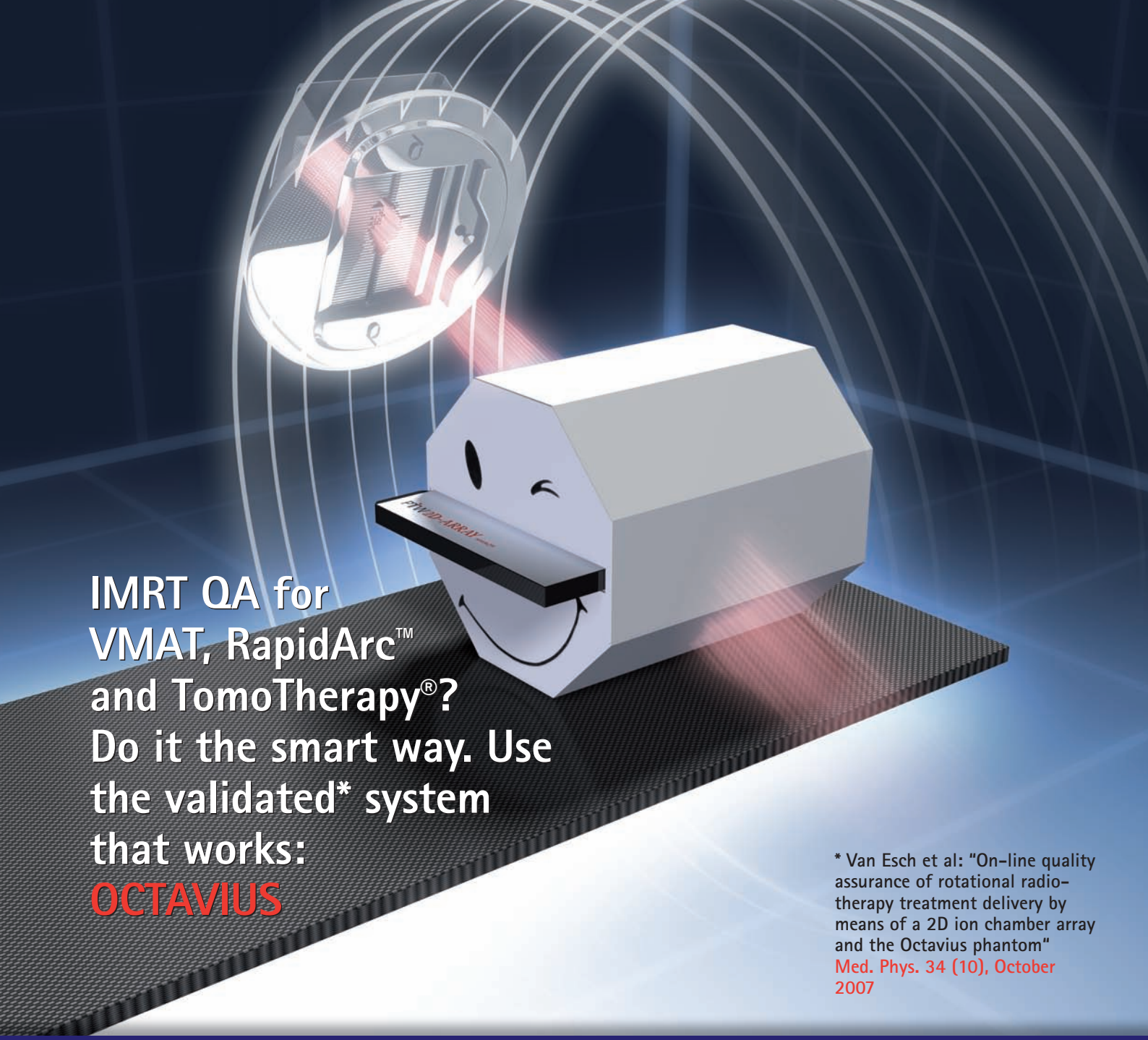
Curriculum development model: a strategy by which curriculum development can be approached comprehensively and systematically. *Role development model:* role development is an umbrella term for the making, elaboration, redefinition, modification and expansion of a role; a role development model is a strategic plan that would take a role from its present state to a desired enhanced future state.

Euratom Project on Dental Cone Beam CT

Cone Beam CT (CBCT), also known as Digital Volumetric Tomography (DVT) is rapidly expanding into the world of dentistry. Unlike its medical counterpart, dental imaging has seemed firmly stuck in a two-dimensional world. In the last few years, however, CBCT machines aimed specifically at the dental market have appeared and it is estimated that around 20 machines are currently on the market. At a price of around €100,000-200,000, depending on the specification, these are affordable for some primary healthcare dentists. While the radiation doses associated with CBCT appear to be lower than those for medical CT, they are higher than those usually met in dentistry. Furthermore, the age profile of dental patients who undergo imaging is skewed heavily towards children and adolescents, adding to the potential risk. There is evidence in the literature of inappropriate and excessive use of conventional X-ray techniques in dentistry. Similarly, there is evidence of poor image quality because of insufficient attention to quality assurance methods and inadequate



training of users. European Guidelines on Radiation Protection for Dental Radiology *http://ec.europa.eu/energy/nuclear/radioprotection/publication/doc/136_en.pdf* were produced in



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* Van Esch et al: "On-line quality assurance of rotational radiotherapy treatment delivery by means of a 2D ion chamber array and the Octavius phantom" Med. Phys. 34 (10), October 2007

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KNOWING WHAT RESPONSIBILITY MEANS

2004 covering all relevant aspects of justification, optimization and referral criteria for conventional dental x-ray imaging techniques, but these guidelines did not cover CBCT in any way.

These challenges have been addressed by the award of a grant by the Seventh Framework Programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities (2007 to 2011) to a multidisciplinary consortium of academic and industry partners. The project (acronym SEDENTEXCT – Safety and Efficacy of a New and Emerging Dental X-ray Modality) aims to acquire key information necessary for sound and scientifically based clinical use of Cone Beam Computed Tomography (CBCT). The duration of the project is 42 months (ending June 2011). Further detail on the project's inter-related work packages and the research team can be found on the project website (*www.sedentexct.eu*), but the work planned includes guideline development by systematic review, dosimetry studies, developing optimisation strategies, diagnostic accuracy studies and economic evaluations. Medical Physicists, notably from Katholieke Universiteit Leuven and The University of Manchester, play a prominent role in the project,

A further important project objective is the production of an "open access" website to provide training and information on CBCT for all stakeholders. SEDENTEXCT has identified EFOMP as a key stakeholder, recognising that medical physicists dealing with diagnostic x-ray services may be asked to provide expert advice to facilities using CBCT. As such, the project wishes to have input from Medical Physicists in Europe in devising the content of the website. It is doing this by requesting individuals to complete a short online "training needs analysis". This is available at:

http://www.sedentexct.eu/surveyphys

and is now open for responses. This is a great opportunity for Medical Physicists to inform their own curriculum for CBCT training, so please respond

Finally, as part of the guideline development process, we are keen to identify existing guidelines on CBCT. Such policy documents are often missed by conventional literature searches, so if you have national, or local, frameworks and guidelines for medical physicists on CBCT then I would be grateful to receive them.
SEDENTEXCT promises to be a dynamic project that should be of interest to any medical physicist with a role in diagnostic radiology. Please keep a link to our project's website on your computer and check out how it develops into the training website in the years ahead.

Keith Horner
Keith.horner@manchester.ac.uk

The members of the SeDentExCT group

EFOMP History Group: Archive of European Medical Physics News: The years 1980 - 1990

The EFOMP history group by John Clifton and Geoff Cusick, both from the UK, have undertaken an enormous effort to collect and scan an (almost) complete archive of the printed issues of the European Medical Physics News. The 17 PDF files of this archive are now available on the EFOMP website at:

http://www.efomp.org/journals.html.

Only the **issue no. 5 of December 1982** is currently missing. If any of the readers has it somewhere in his shelves: Please, sent us a scan of your copy to fill this gap!

A note: At that time EFOMP was written as "E.F.O.M.P." and the Editor of the News, Prof. C. Franconi, came from Rome, Italy.

Number 1 December 1980

european medical physics news

Published by the European Federation of Organisations for Medical Physics (E.F.O.M.P.)

Editorial

As the role of physical science in medicine has become more widespread, over the last three decades, it has achieved a level of importance that is not fully appreciated by clinicians, hospital administrators or politicians concerned with health care.

In its early stages Medical Physics was almost entirely associated with x-ray diagnosis and therapy. The physicist used his basic knowledge of radiation physics to establish and maintain diagnostic standards and to calculate doses of radiation to be delivered to diseased sites. He was the 'back-room boy', unknown to the patients and considered by many clinicians to be just another paramedical accessory. As radioisotopes became more freely available and diagnostic nuclear medicine was introduced, the physicist's role in medicine became more important. His radiotherapy training was applied to the dosimetry of diagnostic radioisotopes and his engineering skills were in demand to aid the development of new imaging systems. Computer skills were required for analysing the data so that quantitative information could support the diagnostic image.

In parallel with these developments, over communications with major implications for improved medical data communication and storage.

In this age of high technology medicine the expensive diagnostic machines which are demanded must be maintained and calibrated regularly. Carefully planned quality control procedures are required. Safety monitoring must be carried out for patients and staff. The responsibility for these procedures falls on the medical physicist. If carried out properly the work can result in substantial financial savings by reducing wastage and repeat studies. These problems are important issues now that the upper limit on financial investment in health care is more clearly evident.

Medical physics is now an established and important branch of medical science. The physical scientist has shown himself able to apply his fundamental scientific knowledge to problems appearing in radiology, nuclear medicine, ultrasound, physiological measurement, bioengineering, surgery, audiometry and photometry, together with new applications in the fields of psychiatry and forensic medicine. Yet because the work of the physical scientist is

Message from the President

It took just twenty-seven months from the first initiative, by the Council of the Hospital Physicists' Association (H.P.A.) in February 1978, to reach agreement on the formation of the European Federation of Organisations for Medical Physics. Twelve months of correspondence was followed by an initial meeting in London in May 1979 at which organisations from fifteen countries were represented. At that meeting it was unanimously agreed to establish a Federation. A Steering Committee under the Chairmanship of Professor J.S. Orr was set up to draw up a draft constitution and working parties were formed to consider professional matters, education and training and publications.

The draft constitution of the proposed Federation was circulated to all interested national organisations and at a second meeting held in London, from 7th-9th May 1980, the constitution was formally accepted by delegates representing the medical physics organisations of fourteen countries, who thus became the founder members of the Federation. Delegates from several organisations who at that time had not

Another request by the EFOMP history group concerns the identification of all persons on a group photo taken 1980 at the EFOMP meeting at London. Some participants could already be identified as indicated by the list below. If you happen to know some of the unidentified persons (8,9,A, D,E,F,G,T,Y), please, send it with the corresponding mark of the photo to the one of the editors of the EMPNews!

Geoff Cusick

John Clifton

List of identified persons:

1 C Franconi
2 MC Paredes
3 M Ribas
4 RE Ellis
5 A Benini
6 JS Clifton
7 A Kaul
B S Orr
C R Gancedo
I P Griffiths
J H Bergmann
K NG Trott
L E Claridge
M BJ Perry
N B Mee
O J Haggith
P B Reece
Q P Asard
R DH Bekkering
S PH Giesson
U A Piron
V R Parker
W R Walstam
X J Chavaudra
Z D Field

EMITEL project for Multilingual Dictionary and e-Encyclopaedia for Medical Imaging Technology

Following the success of the first e-Learning projects in the profession (EMERALD and EMIT - now used in 70 countries), the core of their Consortia work now on a new EU project named European Medical Imaging Technology e-Encyclopaedia for Lifelong Learning (EMITEL). The objective of this pilot project is to develop an original e-learning tool, which will be used for continuing learning of a wide range of Medical Physicists and Engineers. More information is available from

www.emerald2.eu

EMITEL Consortium includes 30+ specialists from King's College London and King's College Hospital, University of Lund and Lund University Hospital, University of Florence and AM Studio, Plovdiv (a web software company). The Consortium includes also the IOMP as an international partner and through it will additionally include colleagues from many other countries. After the end of the project the Web e-Encyclopaedia EMITEL will be available free to all colleagues.

The project builds up on the original CD-based Dictionary of Medical Imaging Technology Terms (initiated 6 years ago), which quickly grew to a full Medical Physics Dictionary cross-translating terms between each of its languages. Initially the e-Dictionary on CD included English, French, German, Swedish and Italian; later it was expanded with Spanish, Portuguese, Polish and Thai. Through EMITEL it has been uploaded to Internet and further updated with Hungarian, Estonian, Lithuanian, Romanian, Turkish and Arabic. Another 6 languages are preparation for inclusion during 2008.

Alongside with the Dictionary, EMITEL will include explanatory articles to each of its approximately 3500 terms (the articles aim at audience of MSc-level and above). Each article includes images, graphs, examples and other additional information.

A special web database and web site with Content Management System were designed to handle the EMITEL e-Encyclopaedia. Most of the articles are ready and uploaded to this web site, which will be launched in 2009.

An International Conference EMITEL was just held in the Abdus Salam International Centre for Theoretical Physics (ICTP, Trieste, Italy). This was facilitated by the fact that recently ICTP was accepted as an external partner to the project. The Conference was attended by delegates from 22 countries, who formed a Network aimed at the future expansion and update of the EMITEL Encyclopaedia. EMITEL is the first such e-learning tool in the profession will be fully ready during 2009. The advanced work in progress of the Web e-Dictionary can be seen at:

www.emitdictionary.co.uk

Slavik Tabakov
EMITEL Coordinator

EFOMP Workshop: Radiation Protection of the Patient 16 – 17 September 2008, Krakow, Poland*

The Workshop was organised by the European Federation for Organisations of Medical Physics (EFOMP) & the AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Krakow, Poland.

Lecturers of the workshop

The purpose of the Workshop was the Continuous Professional Development of practicing junior Medical Physicists with only a few years of working experience. On completion of the course the participants will be able to:

- Be aware of routine and specialised Quality Assurance procedures and Dosimetry for the Radiation Protection of the Patient
- Recognise the importance of managing patient doses for specific diagnostic and therapeutic procedures
- Recognise the weaknesses and strengths of the various imaging modalities
- Recognise the weaknesses and strengths of the various therapy modalities

Discussion after the presentation

Most of the twenty three participants were from Poland. Participants were also present from Portugal and Denmark.

The faculty consisted form experts in each field who lectured in one or more of the following six sessions:

- Diagnostic Radiology (Dr D. Kluszczynski, Poland and Dr R. Padovani, Italy)
- Interventional Radiology (Dr R. Padovani, Italy)
- Computed Tomography (Prof. A.M. Staniszewska, Mr R. Kowski. and Mr. W. Skrzyński, Poland)
- Mammography (Prof. H. Bosman, Belgium)
- Nuclear Medicine (Dr. A. Teresinska, Prof. A. Plachcisnka, Poland and Dr. S. Christofides, Cyprus)
- Radiotherapy (Prof. M. Waligorsk, Dr. J. Lesiaki and Dr. P. Kukolowicz, Poland)

Each session consisted of two lectures, one on Patient Protection and Dosimetry and the other

Prof. Radwanska-Wasliewska handing out the workshop certificates

on Quality Assurance. After the two lectures there was a discussion session moderated by Dr. Stelios Christofides, Cyprus, that proved to be very useful since it gave the chance to the participants to have a discussion on the various issues raised during the lectures. The liveliest discussions took place during the Mammography and Radiotherapy session. In the Mammography session the discussion was around the quality control issues of screening mammography and also Full Field Digital Mammography. In the Radiotherapy session the discussion was around the issues of the modern techniques of IGRT.

All the participants received a book of abstracts and at the end of the workshop a certificate indicating that they were awarded with 12 CPD points.

Photos by: Kamil Kisielewicz, Krakow, Poland
Report by: S. Christofides, EFOMP Vice President

***** Preceding the 2nd European Conference on Medical Physics/ MPEKRAK-08 at Krakow, Poland

2nd European Conference on Medical Physics:

MEDICAL PHYSICS AND ENGINEERING 110 YEARS AFTER THE DISCOVERY OF POLONIUM AND RADIUM (MPEKRAK-08)

Kraków, Poland, 17 – 21 September 2008

The MPEKRAK-08 Conference, held on the premises of the Faculty of Physics and Applied Computer Science, was organised by the Polish Society of Medical Physics (PSMP), the Faculty of Physics and Applied Computer Science of the AGH University of Science and Technology, and the Committee of Medical Physics, Radiobiology and Diagnostic Imaging of the Polish Academy of Science (PAN). The Faculty offers specialist training in Dosimetry and Medical Physics at undergraduate and graduate levels and closely collaborates with several clinical centres in Kraków, including the Collegium Medicum of the Jagiellonian University and the Krakow Branch of the Maria Skłodowska-Curie Memorial Centre of Oncology. The MPEKRAK-08 conference was preceded by an EFOMP workshop and tutorial *Radiation Protection of the Patient* (see accomanying report) and included the 14th General Assembly of the PSMP to elect a new PSMP board. An EFOMP Council and Officer's meeting followed the Conference. Thus, several EFOMP officers were able to lecture at the Workshop, to attend and deliver their presentations at the Conference and to take part in the EFOMP Council. At the same time, the MPEKRAK-08 Conference offered ample opportunity for over 170 participants from Poland and 20 other countries to exchange their experience and to establish personal contacts with leading European experts in medical physics. We feel that this conference format was quite successful and should be considered in future meetings, as it helps to establish closer links between NMO organisations and the European Federation of Organisations for Medical Physics.

Alberto Del Guerra

The Conference paid tribute to the discovery of radium and polonium by Maria Skłodowska-Curie and Pierre Curie and to the subsequent development of what, a century later, has become a distinct field of Medical Physics, as reflected in the conference sessions and their programme. The first session, *The Glorious Past*, chaired by EFOMP and PSMP Presidents, W. Schlegel and M. Waligórski, began by the keynote lecture of Richard F. Mould *Start of the Radium Story*, followed by B. Gwiazdowska's and W. Bulski's

Steve Webb

Maria Skłodowska-Curie: Her relations with the Motherland-Poland (delivered by M. Waligórski), and *An Unbiased View by a Senior Medical Physicist on the History of Polish Medical Physics,* by Oskar Chomicki, former President of IOMP, to be concluded by *Radon as a Medicine* given by Prof. Dietrich Harder, later elected Honorary Member of the PSMP (together with Prof. Barbara Gwiazdowska and Prof. Grzegorz Pawlicki, Past PSMP President) by its General Assembly. Honorary Memberships were later delivered at an official ceremony at the Krakow City Hall.

In the three-part session *Into the Future*, most of the modern trends in medical physics were discussed. Presentations on molecular imaging (by A. Del Guerra, F. Nuesslin, E. Zalewska, O. Sauer), ion radiotherapy– imaging and radiobiol-

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ogy (W. Schlegel, J. Kiefer), brachytherapy (W. Schmidt, B. Romanowska-Dixon), thermal imaging (A. Nowakowski), or nanotechnology in medicine (A. Vaseashta) could serve as selected examples. A historical overview of computed tomography (1921-72) was presented by Steven Webb.

In the session *Towards a Uniform European Education for Medical Physicists* this important topic concerning academic and professional training was discussed in presentations by S. Christofides, H. Mower, S. Tabakov, M. Wasilewska-Radwańska, K. Meigas and C. Caruana.

The session *Quality Control and Radiation Protection* concerned digital imaging (E. Guibelalde, T. Porubszky, A. Torresin, C. H. Lipfert), mammography (S. Avramova-Cholakova, P. Kaplanis), and applications of solid-state detectors: diamonds and TL in this area (B. Marczewska, M. Budzanowski).

The session *The Future of Medical Physics and Bioengineering in Poland* dealt with national projects and installations currently under development: the BNCT facility (N. Golnik), the national hadron radiotherapy project (P. Olko), the ocular proton radiotherapy facility in Kraków (J. Swakoń), and some novel approaches in radiotherapy and electric tomography (P. Kukołowicz, S. Zielinska-Dąbrowska, R. Krzyminiewski, L. Kubisz).

The 88 posters, dealing with medical physics education, biomaterials and biosensors, signal processing and mathematical modeling, imaging, radiotherapy, experimental techniques, dosimetry, radiation protection and QA, were on display throughout the meeting. Posters authored by young scientists (under 35) competed in the Young Scientists Competition, along with ten oral presentations in the *Young Scientists Session*, for the PSMP Award. The first prize in the poster session went to M. Klosowki (Poland) for a series of posters on 2-D TL dosimetry and, in the oral competition, to Ms. A. Skripko (Latvia) for describing a novel method of screening for ocular AMD.

Medical company exhibitors at MPEKRAK-08 were: Eckert & Ziegler (Berlin), PTW Freiburg, Canberra Packard-Central Europe, CMS Freiburg, EDO MED (Warsaw), VDE DGBMT Frankfurt, MEDIX (Warsaw), Candela (Warsaw), and Elsevier Health Science Journals, London (UK).

We were happy to host our guests and contributors in Kraków and look forward to comments and reminiscences of MPEKRAK-08.

Photos by: Kamil Kisielewicz, Kraków, Poland
Report by: M. Wasilewska-Radwanska, MPEKRAK-08 Local Organizing Committee Chair & EFOMP ETPCommittee Chair

The Krakow Conference team

Course on "Radiobiology and Radiobiological modelling in Radiotherapy",

28 April - 1 May 2009, Chester, UK.

The 2008 CCO radiobiology course was held at the Chester Grosvenor, from 22 to 25 April, and attracted between 50 and 55 registrants each day. The move to the centre of Chester was a great success, according to many of the

"students" and the teachers.

This will be the fourth time that Clatterbridge Centre for Oncology has organised this four-day course, which will run from April 28 to May 1 2009 in Chester. It is aimed at developing expertise on using radiobiological models to plan the most effective treatment possible, i.e. killing all the dividing cells in a tumour with no or minimal complications or side effects.

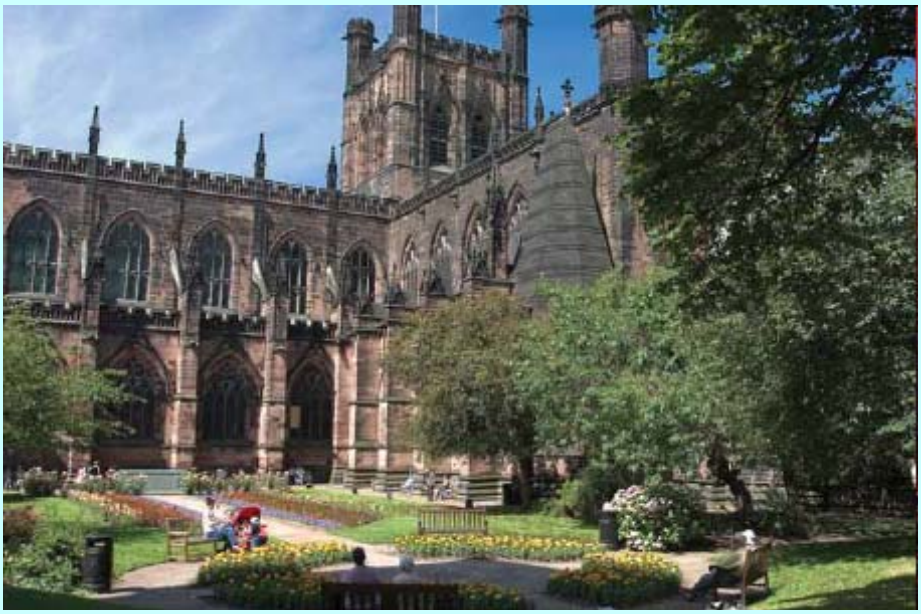
More than 50 oncologists, physicists and radiographers attended the event in 2008, with more than two thirds coming from outside the UK. The largest number of delegates came from Sweden followed closely by Italy and Ireland. Germany, Spain, Denmark, Switzerland, Netherlands, Belgium, Portugal, Mexico, Ecuador, USA, Canada, Slovakia, Israel and Saudi Arabia were also represented.

Faculty members include Karolinska Institute-based radiation track-structure expert Hooshang Nikjoo, Don Chapman, the former Head of Radiobiology at Fox Chase Cancer Centre in Philadelphia and Roger Dale, Imperial College, London, an expert on the radiobiology of brachytherapy. Physicists and Radiotherapy Consultants from Clatterbridge Centre for Oncology also lecture at the event.

Event organiser Alan Nahum says "The course provides a greater understanding about both the basis of radiation treatment for cancer and the use of radiobiological modelling in evaluating and improving treatments. This event brings together some of the leading experts in what is a specialist but vital subject area. For this reason it attracts international interest."

For more information about the course please go to:

http://www.ccotrust.nhs.uk/document_uploads/Radiobiology%20Course/CCORBLGYCOURSEFLYERApril-May09.pdf



The 16th International Conference on Medical Physics – ICMP2008-04-30
14 – 16 April 2008, Dubai, UAE

The International Conference on Medical Physics (ICMP) is an International Organisation of Medical Physics (IOMP) event that takes place between the World Congresses of Medical Physics and Biomedical Engineering. The Dubai Health Authority (DHA) and the Emirates Medical Physics Society (EMPS) were the hosts this year for this event. It took place at the Dubai International Convention Centre.

The following professional and scientific organisations contributed to the scientific programme:

- International Organisation of Medical Physics – IOMP
- European Federation of organisations for Medical Physics – EFOMP
- International Atomic Energy Agency – IAEA
- International Commission on Radiation Protection - ICRP

The Contribution of EFOMP during the organisation of the conference and in contributing invited speakers for plenary sessions and educational session as well as chairing session was very visible and was greatly appreciated by the local hosts who showed their appreciation by presenting EFOMP with an appreciation certificate. Our ex-past President Dr Alberto Del Guerra has received this certificate on behalf of EFOMP in front of the EFOMP booth.

The theme of the conference was “Current and future Sciences in Radiation Medicine”. 407 participants attended it. The total number of abstracts submitted was 271 from 50 countries. 167 abstracts were included in the scientific programme as oral presentations, interactive posters, posters and invited oral presentations.

The programme consisted of 5 plenary sessions, 17 Scientific and 12 educational sessions that run in to parallel tracks, 1 interactive poster session and the IOMP Symposium and the Keynote Lecture.

The Keynote lecture followed the official opening of the Conference with the title “The importance of Image Guided Radiotherapy” and was presented by Prof. T. R. Mackie from the USA.

The IOMP symposium theme was “New Technologies for Radiation Treatment – The Present and the Future”. It consisted of 10 presentations that were presented into two sessions. The morning session subtitle was “The Present” and gave the present situation of the radiation technologies available today for clinical application and the afternoon session subtitle was “The Future” and gave a forecast of the technologies that are likely to become clinically available in the near future.

The Plenary sessions themes and their presenters were:

- Cancer Pharmacokinetics by M. O. Leach – U.K.
- Diagnostic Radiology by K. Faulkner – U.K.
- MRI at Ultra High Field by R. W. Bowtell – U.K.
- Towards New Horizons in Radiation Therapy by F. Nusslin – Germany
- Molecular Imaging by A. del Guerra – Italy

The educational sessions covered the following topics:

- Physics of CT I: Technology and Applications by W. Kalender – Germany
- Physics of CT II: Dose Considerations by W. Kalender – Germany
- Mammography by K. Faulkner – U.K.
- Interventional Radiology by R. Padovani – Italy
- MRI Basics & Perfusion by P. A. Gowland – U.K.
- Functional MRI & Hardware by R. W. Bowtell – U.K.

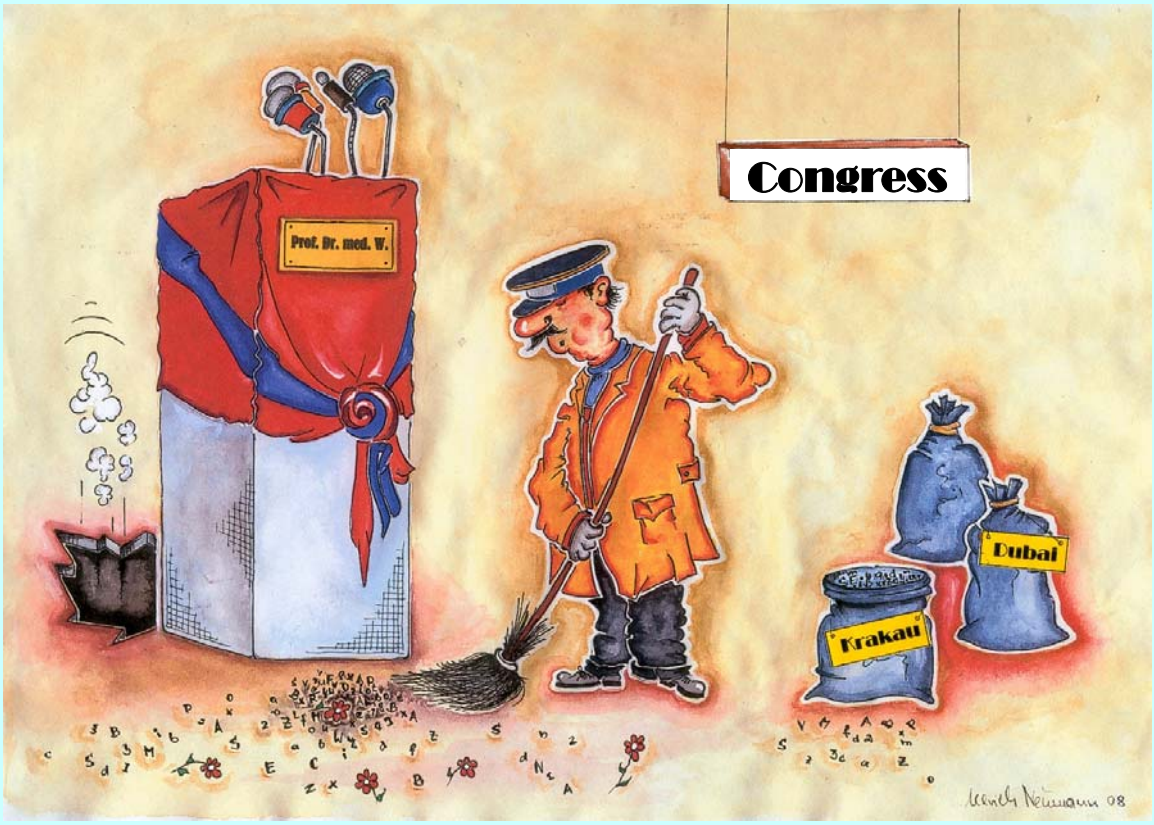
Conference President Barry Allan and Stelios Christofides

Conference President Barry Allan and Renato Padovaini

- IAEA Educational Session – Radiation Protection in Medicine:
  - Activities of Radiological Protection in Medicine by M. Rehani
  - Radiation Protection in Diagnostic Radiology by M. Rehani
  - Dose & Optimisation Approaches for Nuclear Medicine Hybrid Systems by S. Christofides
  - The Role of the IAEA in Radiotherapy and Medical Physics by A. Meghzifene
- Advances in Radiopharmaceuticals by S. K. Osker
- Impact of Molecular Imaging on Radiation Therapy by F. Nusslin – Germany
- Neuro-Physiological Diagnosis Using Evoked Potentials by K. S. Rabbani – Bangladesh
- Applications of Magnetic Nanoparticles by Y. Haik – UAE
- Advances in Quantitative Nuclear Medicine Imaging by H. Zaidi – Switzerland
- Dosimetry in Nuclear Medicine by S. Christofides – Cyprus
- PACS by T. Koch – Germany

The President of the Conference, Professor Barry Allen, has showed his appreciation to all the invited speakers at a special cocktail party by presenting them with a symbolic gift and a certificate. The photographs above show Dr Stelios Christofides (left photo), Vice President of EFOMP and Dr Renato Padovani (right photo), Secretary General of EFOMP receiving their certificates.

Report by S. Christofides,
EFOMP Vice-President



Cartoon by
U. Neumann,
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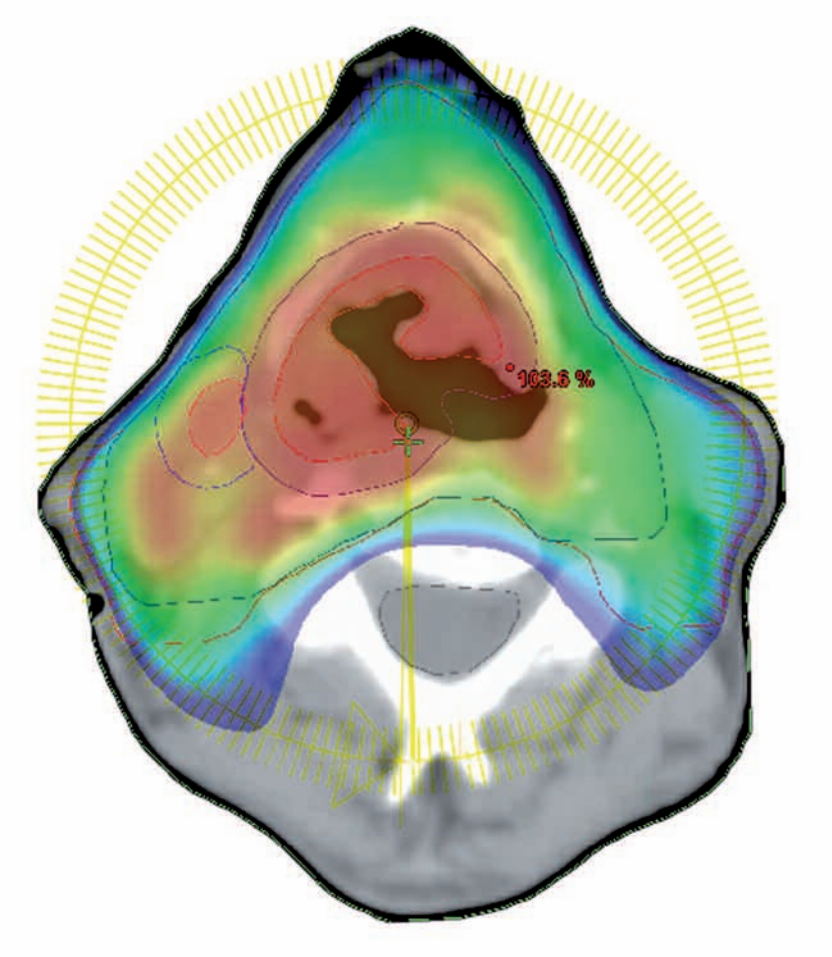

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The people behind Medical Physics:

Cari Borrás, Medical Physicist, Chair of the IOMP Scientific Committee.

I was born in Barcelona. I have spent most of my life in the United States, but I still have a house in Barcelona. I haven't married. I do not believe in fixing an age for retirement. I think that I still have a lot to offer to the medical physics community. Being a medical physicist and woman? *Never been a problem for me.*

Cari Borrás (left) and Núria Jornet (right)

Núria Jornet: When and why did you decide to go for a physics degree?

Cari Borrás: When I was studying junior high school in Spain –at fourteen years old– I had to choose between Science and Humanities. I found sciences more challenging in the sense that science was about discovering, so that control was outside me. By contrast, literature was creation and the control was inside me. Then, when I finished the secondary school, among all the degrees that were available at the university, I chose physics because it combined two things that I loved; math and experimentation.

What was the proportion of males and females studying physics?

This is very interesting. We were 7 girls out of 60 physics students the first year. At graduation time, from those who started together, 6 of the girls and 9 of the boys obtained the degree. From those numbers it is easy to see that the girls did better... So I have never thought that physics was more a male's than a female's degree.

And then, how did you enter the medical physics world?

When I was studying at the university I didn't know that there were physicists working in hospitals. I didn't remember then, that when I was seventeen, I had taken a psychotechnical test, the result of which was that I had the profile to study physics applied to medicine or agriculture. I used that test to convince my parents to let me go to the university, but I forgot about this recommendation till years latter when I was a medical physicist and I found the report.

Anyway, when I was finishing my degree, I decided to specialize in radiobiology and I asked for a scholarship to the Commissariat a l'Energie Atomique at Saclay, France. That same year, I read in the paper that there was a symposium on radioisotopes applied to medicine at the *Hospital de Sant Pau* in Barcelona. As I've always been curious, I decided to go. There I met Dr. Subías who was the Head of the Oncology and Nuclear Medicine Department, which included radiotherapy. He offered me a job.

Did you accept?

I told him that I didn't want to work in a hospital, that what I was really interested in was radiobiology. And then he told me " Do you know that radiobiology is the basis of radiation therapy?"

So you didn't...

No, I did not take the job right then. But as I didn't get the French scholarship that year, I accepted the offer made by Dr. Subias and I worked in the hospital for two years (1964-1966). In 1965 I applied again to the French Government to go to Saclay and also to the Fulbright Commission to receive a scholarship to go the United States.

Did you get any of them?

Actually I got both of them, and I made the decision to go for the Fulbright one. I left for Thomas Jefferson University in Philadelphia, where I stayed till I finished my Ph.D. Thesis in radiobiology.

And you decided to stay in the States?

Yes, I fell in love with an American from California and in 1974 I moved to San Francisco. There I worked in the West Coast Cancer Foundation (WCCF). It was a private non-profit organization that provided medical physics support to Northern California community hospitals that didn't have any physicist.

Did you drop your research in radiobiology?

Yes, I decided medical physics was easier. My work in the WCCF was mainly clinical. So, I did not have time for research, and I missed it. I

have always doubted if leaving Thomas Jefferson just after my Ph.D. was the right move. However, in 1981 I was invited to do research as a guest scientist in the Laurence Berkeley Laboratory. Those years were interesting; I was involved in the use of a CT scanner specifically designed for radiotherapy planning with heavy ions. At the same time, I was a Clinical Assistant Professor at the University of California San Francisco. The clinical part was complemented with research and teaching.

When did you move to the East Coast?
It was in the late eighties; Gerald Hanson, who was the Regional Advisor in Radiological Health at the Pan American Health Organization / Regional Office of the World Health Organization (PAHO/WHO) headquarters in Washington, phoned me and asked me whether I wanted to apply to his post now that he had been appointed Chief of Radiation Medicine at WHO's headquarters in Geneva.

Did you profit of your experience working in the West Coast Cancer Foundation when you moved to the Pan American Health Organisation?
Yes, it was very useful. In some way, the tasks were similar. For instance, instead of convincing hospital managers with lack of resources that there was a need for a medical physicist, I now had to convince Health Ministers. I had to make them understand that physicists were necessary and that they could improve the quality of the services. It was a job that I enjoyed a lot and was very rewarding.

Which were your tasks there?
Well, they included data collection and situation analysis, revision and development of standards and guidelines, consultations in radiation protection and in radiation medicine, assessment of policies and resources for radiology services coverage and for radiation protection programmes, training activities, promotion of quality assurance programmes, collaboration with WHO and IAEA programs, the initiation of a network of radiological physics centres that could train professionals within the country, and assistance in case of radiological emergencies.

From your experience in PAHO how do you think industrialized countries can help developing countries?
At all levels; education, technology and knowledge transfer… Physicists in these countries are intelligent and hard workers, but they are afraid of taking risks. And there's no progress without risk.

Why?
These societies do not forgive. If you commit an error, you are fired. And there are not many medical physicists' posts. So, I think that there's a lot to do there in convincing governments that to err is human. Sometimes we tend to think that we should transfer technology to these countries but the first thing that we should transfer is our attitude. For instance, they have to understand that the aim of a quality assurance programme is to improve quality and not to penalise people.

So, what do you think of clinical audits in these countries?
Clinical audits are useful to guarantee and improve quality only if they are voluntary, the government is not involved and most importantly, if they are peer to peer. In a country like Haiti you cannot send a team from a highly developed radiotherapy centre, the levels are too different. I am trying within the Latin American Radiation Oncology Society (ALATRO in Spanish) -as chairman of the quality assurance and accreditation committee- to organise radiation oncology audits. And I think that's the way, audits should be offered by the professional organisations. International organisations should only give recommendations and provide guidelines; they should not send international teams.

What about education of medical physicists, is it better to create training centres within the country or to send professionals abroad?
Both things are useful; to have excellence centres in the countries to train locals where you can invite international teachers, as well as sending some professionals to other countries to be trained in specific areas with the commitment of returning to their countries and transfer their knowledge to their colleagues.

What do you think is the role of organisations such as IOMP, EFOMP in both the industrialized and developing countries?

They have a lot to do. They have the advantage of being flexible. For instance, together with intergovernmental organizations, they have the task to get recognition for medical physicists all over the world. They can also do a lot for the individual education of medical physicists by identifying grants, having databases of hospitals

and universities where physicists can be trained. As chair of the IOMP Scientific Committee I am working now, among other things, in the creation of a database, i.e. of the basic bibliography that a medical physicist should have access to. So lots of ideas, projects; the only problem is that these kind of professional/scientific organisations do not have money!

Is there any fact in your life that has had a special impact on your career?

I am not sure there is any special event, but I remember a story that I was told by the German nuns of my school when I was about 7 years old, which I think has influenced both my private and professional life. It is the story of a catholic saint, Saint Martin de Tours. According to the legend, one very cold day he met a beggar who asked for help. Saint Martin took his coat off and tore it in two parts, one for the beggar, the other one for him. The important thing is to share and that is what I've tried to do all my life. I think I am good in facilitating people to work together.

Is there any person who has marked your professional life?

Professor Robert Owen Gorson, in Philadelphia he was like a second father to me, he taught me to be independent. One day, I was complaining that the staff at Jefferson's Radiotherapy Department didn't take me seriously and he told me "you cannot demand respect, you have to earn it". It is a statement that I have remembered all my life.

If you could change something in your career, what would it be?

I have given more than 175 invited lectures, but I have written very few papers in peer reviewed journals. I would write more papers. Maybe going to the West Coast Foundation after the PhD was not the best move. Perhaps I should have gone to an academic institution, where I would have published…

Three advices to a physicist who is starting in the field.

First, to study hard; a strong theoretical background is extremely important. Secondly, to think about the patients when making measurements on a treatment/diagnostic unit late in the evening and finally, and the most important, to enjoy the job!

Is there any day that you remember in particular from your career?

Of course, important dates are when the Spanish Medical Physics Society (SEFM in Spanish) gave me the Gold Medal or when the American College of Radiology or the American Association of Physicists in Medicine made me Fellow. But I want to single out a day in early November 2000, when three important events happened. While keeping the responsibilities for radiological health, I was appointed Coordinator of the Essential Drugs and Technology Program within the Division of Health Systems and Services of PAHO, a managerial position never before occupied by a physicist. The Medical Physics Point/Counterpoint article on "Standards for image quality and radiation exposure impede the pursuit of optimized quality/dose ratios in radiology" by David Goodenough and me was published. And I received seven applications for a PAHO research project on Quality Assessment of Radiology Services, to be subsidized by the PAHO Director. I spent all night reading the proposals. Medical physicists and radiologists, to whose training in radiological physics I had contributed, wrote them. I felt so proud of them... They were taking risks and wanted to lead these projects. I think that this was one of the happiest days of my life.

How do you see the future of medical physics?

I don't see any future if we don't refocus our job. Most Medical physicists spend too much time doing quality control tests. The tasks of a Medical Physicists should be designing processes, monitor them and so on, but not to perform the quality tests. They should spend more time on development, assessment and implementation of new technology. Medical physicists should do the work of a physicist and not that of a technician.

What do you like to do in your free time?

I like cross-country skiing and chasing sun eclipses... but I love to work.

Scientific Meetings

February 16- 18, 2009:
Operations Research in Radiation Oncology Workshop
School of Engineering and Information Technology, Deakin University,
Melburne, Australia
Contact: vicky.mak@deakin.edu.au
Info: www.deakin.edu.au/scitech/eit/radio/

March 11-13, 2009:
ICTR 2009: Fourth International Conference on Translational Research in Radiation Oncology
CICG - Centre International de Conférences de Genève, Geneva, Switzerland
Contact: PD Dr Jacques Bernier
Info: www.iosi.ch/ictr2009.html

April 28 - May 1, 2009:
RADIOBIOLOGY & RADIOBIOLOGICAL MODELLING IN RADIOTHERAPY
A 4 day course at Chester, UK

May 8-9, 2009:
Medical Physics Workshop 2009 (MPW'09) – Where is Portugal in the Medical Physics World. Aveiro, Portugal
Contact: mpw09@fis.ua.pt
Info: www.i3n.org/mpw09/

March 6-10, 2009:
ECR2009, Vienna, Austria
Info: www.myesr.org

EFOMP Workshop at ECR2009:
Saturday, March 7, 08:30-12:00h
New technology in diagnostic radiology imaging science
An interdisciplinary scenario for the medicine of health

EF 1 Advances in available tools
Moderators: *S. Christofides; Nicosia/CY*
A. Torresin; Milan/IT
Nanotechnologies and nanoparticles in MRI
S. Aime; Turin/IT
Optical imaging at a cellular level in vitro and in vivo
C. Fraefel; Zurich/CH
Detecting tumor responses to treatment using hyperpolarised magnetic resonance imaging
K. Brindle; Cambridge/UK

EF 2 Advances in clinical applications
Moderators: *G.P. Krestin; Rotterdam/NL*
W. van der Putten; Galway/IE
Advances in optical imaging toward clinical applications
C. Bremer; Münster/DE
Morpho-functional imaging for personalised cancer therapy
S. del Vecchio; Naples/IT
Funding for imaging science: Where do we stand now in FP7
P. Jehenson; Brussels/BE

May 13-16, 2009:
2nd Congress of Radiation Chemotherapy in conjunction with the 5th Meeting of Medical Physics
Cordoba, Argentina
Contact: cordoba@congresosint.com.ar
Info: www.congreso-radioterapia.com

June 15-17, 2009:
VI Symposium on Medical Physics, IV International Symposium on Medical Physics
Beskid Mountains, Poland
Contact: ismp@us.edu.pl

Aug 30-Sept 3, 2009:
10th Biennal ESTRO Conference on Physics and Radiation Technology for Clinial Radiotherapy, Maastricht, The Netherlands.
Info: www.*estro*.org

Sep 7-12, 2009:
Medical Physics and Biomedical Engineering WC2009, Munich, Germany
Including DGMP annual meeting and EFOMP 3rd European Conference on Medical Physics.
Info: www.wc2009.org