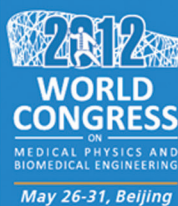




President's Message

Kin Yin Cheung

25 June 2012



Report on the  
World Congress on  
Medical Physics and  
Biomedical Engineering  
2012, Beijing, China



IOMP  
POLICY  
STATEMENTS



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# Medical Physics World



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## Message from the Editor



Dear friends and colleagues

As some of you may already know, I took over as the editor of the electronic Medical Physics World (eMPW) very recently (29th May 2012, during the World Congress on Medical Physics & Biomedical Engineering at Beijing China). It was quite a challenge, since the two previous editors of eMPW, Dr Donald Frey and Dr Ishmael Parsai, have done an excellent job the past years. After setting up my editorial team, we all worked hard to refresh the eMPW. Therefore, I am really very proud to present to all of you the brand new version of the eMPW. This particular issue has been made specifically to announce its new format and is going to be distributed in the upcoming Annual meeting of AAPM in Charlotte, NC, USA and also in European Medical Physics Conference which is going to be held in Sofia, October 2012. Our intension is for eMPW to be partially printed on paper and distributed at the large conferences.

Please do not forget that it will be made available on IOMP website, as usual, where all previous issues are also available. It will also be sent to all IOMP members reaching a number of more than 18000 people in more than 81 countries within the 46 Regional organizations.

I would also like to take this opportunity to thank all the members of the editorial team for their suggestions, comments and ideas and particularly Dr Magdalena Stoeva, our associate editor, for her hard work and help during the renovation of eMPW.

Also, I would like to draw your attention to our Calendar Editor, Ibrahim Duhaini duhaini@yahoo.com. Please contact him for scientific or international events so as to be included in eMPW. Deadlines are April 1 and October 1 for issues that are mailed several weeks later. Finally, we value your feedback so please do not hesitate to contact us if you would like to make any suggestions or submit brief papers on your scientific or educational work that would be of interest to our members. Quoting the mission of IOMP": "advance medical physics practice worldwide by disseminating scientific and technical information, fostering the educational and professional development of medical physicists, and promoting the highest quality medical services for patients", me and my team will work so that the new eMPW becomes the IOMP tool for accomplishing this mission.

Virginia Tsapaki  
Chair, editor eMPW

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Looking toward the future, we shall continue with the work of our esteemed predecessors in promoting the advancement of medical physics.

## President's Message

Kin Yin Cheung, 25 June 2012



It is indeed my honour taking over from Professor Fridtjof Nuesslin the presidency of IOMP. I would like to congratulate Fridtjof for his enormous contributions and achievements made during his term of office. I would also like to express my gratitude to all the retiring IOMP officers and chairs and members of committees and task groups, particularly Dr. Barry Allen, Immediate Past President, Dr. Harald Paganetti, Science Committee Chair, Dr. Maria Lopes, Education & Training Committee Chair and Don Frey, Honours and Awards Committee Chair for their contributions to IOMP in the past few years. It has been my pleasure working with every member of the Executive Committee and those who supported IOMP over the years. As you can see from the various reports to Council during WC2012, IOMP has gained a lot of ground in

promoting the advancement of medical physics and the profession in recent years. I would particularly like to mention a few things.

- With the persistent efforts by several IOMP Presidents and their team members, International Labour Organization (ILO) has classified medical physicists in the 2008 edition of International Standard Classification of Occupations (ISCO-08) as professionals. The ILO classification paves the way for official recognition of medical physicists as professionals in member states. More information on the ILO classification and the IOMP guidance on ISCO-08 and its implications to our profession can be found in the IOMP website <http://www.iomp.org/?q=content/archived-news>.

- The role and responsibilities of medical physicists in radiation medicine are for the first time defined by IAEA in their new Basic Safety Standards. This again is a significant boost to our efforts in raising the awareness and status of medical physicists in healthcare.

- IOMP has established formal collaboration with international organizations such as WHO, IAEA, IRPA on a range of scientific, professional and educational issues of common interest. Such collaborations help promoting safe application of health technology and ra

diation in healthcare. They also help increasing the awareness and visibility of our profession in our societies.

- Formation of the regional organization in Africa, FAMPO. Although FAMPO has yet to be fully established, the organization can potentially help to establish a network of collaboration amongst the member countries in promoting medical physics in the region. A seed conference on education and training of medical physicists is being planned for the region to be held in Nigeria in 2013. Hopefully the event will stimulate strong participation and collaboration amongst FAMPO countries, which in turn can help improve standard of practice of medical physics and radiation protection in the region.

- Official release of Policy Statements No. 1 “Medical Physicists: Role and Responsibilities” and No. 2 “Basic Requirements for Education and Training of Medical Physicists”. These documents provide guidance on definition and role and responsibilities of medical physicists and on the minimum requirements on their education and professional training. The documents can help to ensure the standard of practice in our profession. Looking toward the future, we shall continue with the work of our esteemed predecessors in promoting the advancement of medical physics. One of the issues we should be ▶

▶ looking at is to enhance the recognition and visibility of the medical physics profession in our societies. A survey conducted recently by IAEA in which IOMP was involved indicated that infrastructure for formal education and training of medical physicists was generally not available, particularly in developing countries. Another series of surveys conducted in the AFOMP region indicated that medical physics manpower allocation in radiation medicine was far from satisfactory. The average medical physics staffing provision in radiation medicine was less than 1 medical physicist per megavoltage radiotherapy machine. The situation for imaging medical physicists was far worse. Imaging medical physicists either do not exist or are very few in AFOMP countries. The situations in the ALFIM and FAMPO regions appear to be similar. There are indications that one of the main reasons for these phenomena is lack of state recognition of the medical physics profession. Getting official recognition of the medical physicists in all the countries will be one of the highest priorities in the IOMP agenda in the coming years. There is unfortunately no simple solution to this problem. The recognition by ILO and IAEA of our profession will help sensitizing state officials on the need for medical physicist in healthcare. IOMP should at the same time strengthening our efforts to increase the awareness and visibility of the medical physicists. A concerted effort of the IOMP and its national member organizations together with international organizations, WHO and IAEA in particular, is essentially required to ensure success. IOMP could, in collaboration with WHO and IAEA, sensitize member states to implement

the recommendations of the new IAEA BSS, in which the role and responsibilities and qualification of medical physicists are defined. IOMP could also provide guidance and support to member organizations on issues such as development of formal infrastructure for education and training of medical physicists, establishment and implementation of professional certification or state registration systems, and planning of medical physics manpower requirements.

In addition, IOMP should strengthen its visibility and communication with national and regional organizations. Stronger support and participation by IOMP officers and committee chairs at regional and national scientific and educational activities are encouraged. IOMP will continue to enrich the content and improve the design and circulation of the IOMP website and eMPW. IOMP has also launched e-Zine, an electronic news bulletin that aims to bring the latest news on IOMP and information related to medical physics more frequently. Another initiative being taken to increase visibility of medical physicists is to establish the International Day of Medical Physics, an idea raised by Dr. Simone Kodlulovich, President of ALFIM. 8 November, the day when Professor Wilhelm Rontgen discovered X-ray in 1895, was recommended by EXCOM and endorsed by Council during WC2012 as the International Medical Physics Day. A series of educational and scientific activities are being organized to mark this day in this year.

On the issue of scientific development, IOMP is exploring the possibility of establishing an official IOMP journal

to serve its members. The need and practicality for running such a journal has been discussed and supported at EXCOM meeting during WC2012. The objective of the journal is to provide an appropriate platform for members to publish their research work, thereby promoting scientific research and exchange of knowledge and experience.

The issues discussed above are some of our thoughts and agenda items in our action plan. They are mainly aimed at elevating the awareness and professional status of medical physicists. It will be my pleasure working with the new team on these and related issues. New ideas and initiatives will likely be raised as the committees are start functioning and implemented in the coming years. I would also welcome any ideas and proposals from members which may help us in promoting the global development of medical physics. ◀

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# Review IOMP term of office 2009-2012

Fridtjof Nuesslin, Immediate Past President IOMP, Munich, July 2012



## Introduction

This is to shortly review the last 3 years and to highlight a few achievements. The guideline throughout our term was the MISSION statement of the IOMP: "IOMP is charged with a mission to advance medical physics practice worldwide by disseminating scientific and technical information, fostering the educational and professional development of medical physics and promoting the highest quality medical services for patients."

Accordingly, we started our term in 2009

with the intent to particularly focus on the advancement of medical physics in those regions where educational, scientific and professional development has not yet begun or is just in a maturing phase and need support from the IOMP. Specifically, we felt it necessary to advance medical physics in Africa and in Latin America. The report will be structured into 3 sections, (1) Current Activities, (2) International Activities & Achievements, and (3) Challenges & Perspectives.

▶ [Continues at p. 8](#)

## From the desk of Secretary-General, IOMP

Madan M Rehani, PhD, International Atomic Energy Agency (IAEA)



The need for international organization arises for uplifting the status in less developed countries. While UN based organization are able to provide financial resources for human resource development, capability and capacity building, international professional bodies create a milieu for mutual interaction between professionals from developed and

developing countries, become a catalyst in transfer of resources like publications or used equipment, knowledge dissemination through sponsorship or endorsement of training activities, dealing with international organizations on professional issues that support development of individuals and profession, providing feedback to international bodies on ground realities of profession and professionals in different countries and reviewing documents of international organizations. In addition there are issues of harmonization of certification, development of policy statements and awarding distinguished professionals. All these activities are being pursued by IOMP and the eMPW is one of the media that helps communicate with membership, besides website ([www.iomp.org](http://www.iomp.org)), and publications.

I am happy to be coordinating above activities and with the help of dedicated team of professionals, who are giving their valuable time to the organization, am able

to see that we fulfil expectations of our membership. All Officers and Chairs of Committees and membership are volunteers.

I wish to take this opportunity to thank Council of IOMP for electing me for another term as Secretary General. I will further utilise my experience of working in a UN organization to add few drops in ocean to promote medical physics and support the cause of IOMP to help medical physicists in developing countries. I am reminded of a quote:

*"Before you do anything, stop and recall the face of the poorest most helpless destitute person you have seen and ask yourself, 'Is what I am about to do going to help him?'"*

*Mahatma Gandhi*

This issue of eMPW lists a number of activities undertaken to enable readers understand the role IOMP is playing in helping our colleagues in developing countries. ◀

► Review IOMP... Continued from p. 7

### Current Activities

Four main activities shall be addressed:

- **International Labor Organization**

At the very beginning of our term in 2009 we resumed the previous dialogue with the International Labor Organization (ILO), and fortunately achieved a most encouraging step forward in the development of our profession: "The occupation of 'Medical Physicist' is explicitly included for the first time in the latest version of the International Standard Classification of Occupations (ISCO-08) under group 2111, 'Physicists and Astronomers'. Although medical physicists are not classified under group 22 Health Professionals, medical physicists working in health services are recognized as such as there is a specific note under group 2111 stating ".....medical physicists are considered to be an integral part of the health work force alongside those occupations classified in sub-major group 22, Health professionals.....". (P.S. Smith, IOMP Liaison to ILO&WHO).

All national health authorities are in a position to refer to that ILO scheme ISCO08 and to release the proper regulations for the medical physicists as health professionals. The ISCO08 is the reference to initiate a mechanism of State recognition of Medical Physicists worldwide, in developed and developing countries.

- Finalizing of the Policy Statements 1 & 2 setting the framework for developing the role of the medical physicist properly adjusted in each country.
- Most important is the current activity of the Professional Committee (Chair: Dr Raymond Wu) to provide a scheme of professional certification for medical physicists. Only very few national member organizations have implemented their own certification system.
- A model for implementing particularly in developing countries an education &

training scheme which shall be based on the cooperation of the IOMP with WHO, IAEA and industry is on the way and needs further elaboration by the incoming E&T committee.

### International Activities & Achievements

- **Regional & National Organizations**

Currently the IOMP covers 76 national member organizations most of them are affiliated to 6 Regional Organizations. Numerous activities of these organizations deserve to be mentioned. An outstanding event was the International Conference of Medical Physics ICMP2011 held in Porto Alegre in 2010 and hosted by the Latin American Association of Medical Physics (ALFIM) and the Brazilian Association of Medical Physics (ABFM).

One of the largest national member organizations of IOMP is the AAPM and I very much appreciate the regular dialogue between our organizations at the regular leadership meeting at the annual AAPM congresses. Cooperation is particularly addressing the coordination of our activities in the developing countries.

- **World Health Organization**

A collaborative plan was agreed for 2010 – 2012 involving four areas of activity – (1) Promoting the safe use of health technologies, (2) Participating in WHO surveys, (3) Workshops and training, and (4) Dissemination of information (Liaison: P.S. Smith).

As part of this collaboration there is a strong involvement of the WHO in the World Congress. Many efforts have been taken to get IOMP formally recognized as a NGO (Non-Governmental Organisation) by the WHO soon.

- **International Atomic Energy Agency**

Another very promising collaboration is the link with the IAEA which has been significantly expanded during our term. This partnership has many facets, I can only mention very few like the involvement of the IOMP in the Steering Panel on The International Action Plan for the Radiological Protection of

Patients, most importantly the International Basic Safety Standard (BSS) just released as an interim version which challenges the IOMP to disseminate and support transform into the medical environment worldwide. Furthermore, The International Symposium on Standards, Applications and Quality Assurance in Medical Radiation Dosimetry [IDOS], the IAEA Smart Card/SmartRadTrack project, the IAEA Programme of Action for Cancer Therapy (PACT) the most relevant engagement of the IOMP in the Advisory Group on increasing access to Radiotherapy Technologies in developing Countries (AGaRT). This global initiative bundles the forces of health care and professional organizations together with industry envisaging to use radiotherapy as an anchor to build self-sustaining national cancer control programmes in developing countries. Along our Mission the AGaRT initiative demands full support of IOMP to develop reasonable, effective and affordable measures combatting cancer: Over 84 million will die of cancer in the next 10 years - 75% of them in LMIC.

- **International Radiation Protection Association**

Radiation protection is one of the priorities of the medical physics profession. A Memorandum of Understanding with the IRPA was signed in 2010. ► [Continues at p. 11](#)

## VI<sup>th</sup> European Conference of Medical Physics

XI<sup>th</sup> BSBPE National Conference  
Biomedical Physics and Engineering



October 18 – 20<sup>th</sup>, 2012  
Sofia, Bulgaria





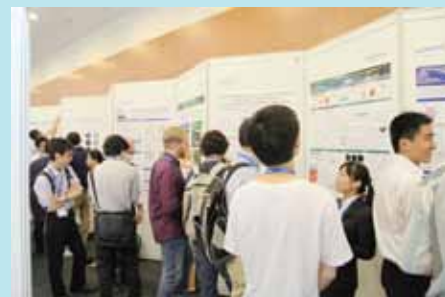
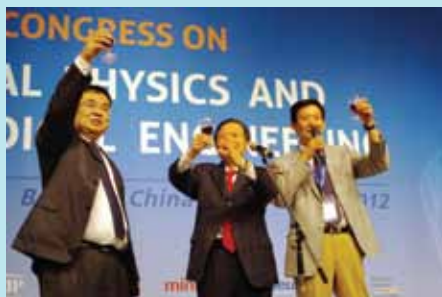
## Report on the World Congress on Medical Physics and Biomedical Engineering 2012, Beijing, China

The 2012 World Congress on Medical Physics and Biomedical Engineering (WC2012) was organized by IOMP, IFMBE, CSMP and CSBME and held in Beijing, China, on May 26-31, 2012. The event brought together more than 1600 participants representing national medical physics and biomedical bodies, as well as regional and international organizations, to share knowledge and experience in the field of medical physics and biomedical engineering. More than 60% of the participants came from outside China to make it a truly worldwide event. The WC2012 with the theme of “Promoting Health through Technology” was striving to provide a powerful platform to share the latest information on global health challenges, advanced technologies and innovative applications. The congress began with an impressive keynote speech which was delivered by Dr. Erwin Neher, the Nobel Laureate in Physiology or Medicine, about signals and signaling mechanisms in the central nervous system. Several plenary lectures and theme keynote lectures on medical physics were held in the following days. Dr. William R. Hendee delivered a plenary lecture about his review of the safe use of medical technologies and pointed out

that new and improved technologies must be assessed carefully to ensure safe use in radiotherapy and medical imaging. Dr. Charlie Ma’s plenary lecture introduced the medical physics profession and described the scope of practice for medical physicists working in radiation therapy and responsibilities. Prof. Yimin Hu, Dr. David Jaffray, Dr. Ben Mijnheer, Dr. Harald Paganetti and Dr. Xiaochuan Pan presented theme keynote lectures to introduce the latest research progress in medical physics, including radiation oncology physics, medical imaging physics, profession and education, etc. These lectures represented the top academic level and greatly added caliber and substance to this Congress.

A significant part of the congress was mini-symposiums and workshops, which provided the opportunity for researchers to present their work in more focused way than the regular oral sessions and to have discussion of particular topics of interest to the community. 24 mini-symposiums and 9 workshops are carefully organized by the experts in medical physics and biomedical engineering. Those mini-symposiums and workshops embraced a wide range of topics in medical physics, such as adaptive

radiotherapy, SBRT, brachytherapy, Monte Carlo, radiation protection, nuclear emergencies, education and training, writing and reviewing scientific papers, and so on. This was really an important opportunity for young medical physicists and students to learn the current status and future directions of medical physics and the practical and professional skills. Co-chairs of the Organizing Committee were Dr. Depei Liu, Dr. Yubo Fan and Prof. Yimin Hu. Assisted by the Scientific Committee, Exhibition Committee, Finance Committee, Publication Committee, Education and Training Committee and Professional Standards Committee, and also received valuable assistance from IUPESM Coordinating Committee, the congress organizers did a great job over the years. Special thanks should be given to Scientific Committee Members and Track Co-chairs for their hard working in inviting speakers, recruiting reviewers and organizing sessions. The congress has received a good number of submissions by authors from 82 different countries. After peer-reviewing by over 500 worldwide experts, 1314 oral and 786 poster abstracts were accepted to be presented in over 200 oral sessions ▶

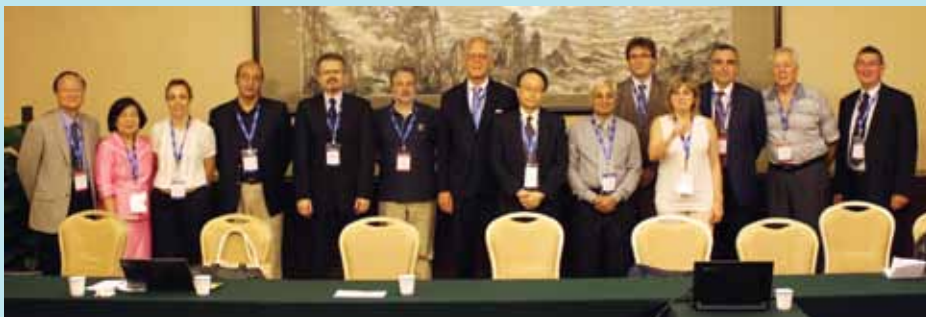


▶ and 80 poster sessions. A very large proportion of the abstracts were submitted to the subjects of radiation oncology, medical imaging and radiation protection. It also grappled with topics as diverse as hadron therapy, intraoperative therapy, real-time IGRT, HIFU therapy, systemic alpha therapy, hyperthermia therapy, laser technology and

nanotechnology in radiation therapy, biological effects of radiation, education and career development in medical physics.

The congress was successful in many ways. The organizers produced a vibrant and diverse program for the congress to provide an important channel for exchange of information between medical physicists and

biomedical engineers. The only unfortunate thing is that many delegates in Africa and Middle East couldn't come to Beijing to attend the congress due to the visa refusal. Those who did not attend this congress should make plans to attend the next congress, WC2015, which will be held at Toronto, Canada in June 2015. ◀



*IOMP officers and ExCom past and new chairs at WC2012, Beijing*



## Education and Training of Medical Physicists in Radiation Protection

**John Damilakis, Chair, IOMP Education and Training Committee**



Health care institutions invest rapidly in new sophisticated technologies worldwide. This is especially true for medical imaging applications. For example, multi-detector CT scanners with advanced features replace obsolete devices

worldwide, new units are also installed and the global base of CT scanners is expected to exceed 67 thousand systems by 2017 (1). This rapid technological development is associated with a constantly growing use of ionizing radiation in medicine.

It is true that medical procedures constitute the most significant man-made source of radiation exposure. Medical technologies based on ionizing radiation require medical physicists to have updated knowledge in radiation protection to apply these technologies for the benefit of the patients. It is, therefore, necessary to establish a high standard of education and training programmes in radiation protection for medical physicists.

International organizations such as IAEA

and WHO are very active in radiation protection education and training through the organization of training courses and the production of educational material. The ICRP provides recommendations and guidance on all aspects of medical radiation protection. Recently, ICRP published a report on education in radiation protection for diagnostic and interventional procedures (2). The EC has launched several projects such as the MEDRAPET (MEDical Radiation Protection Education and Training) and the EMAN project (European Medical ALARA Network) to improve the implementation of the Medical Directive's provisions related to radiation protection education and training of medical

▶ [Continues at p. 12](#)

# Professional Relations Committee Report, PRC

Raymond K. Wu, PhD, PRC Chair



WC 2012 and Travel Awards  
 PRC organized several Tracks and Symposia on Professional matters in Beijing, including the Staffing Requirements Symposium jointly with IAEA and WHO, the Global Certification and Continuing Professional Development Symposium, and the Entrepreneurship Workshop. Several other joint symposia and workshops with IAEA and WHO are mentioned elsewhere in this issue of eMPW. PRC also organized and managed the IOMP Travel Award Program. With the assistance of the IT team of the World Congress, the application was made a part of the online registration process. Besides IOMP, IAEA played a significant role providing financial support for the program. The recipients of the Travel Awards are: Z. Begum - Bangladesh, B. Cancino\* - Cuba, S. D. Sharma - India, F. Kalantari - Iran, H. Yassine - Morocco, P. Chaurasia\* - Nepal, A. Zaman\* - Pakistan, M. Bacaling\* & R Remoto - the Philippines, C. T. Lin - Taiwan and T. T. Van - Vietnam. (\* IAEA supported). Two unlisted individuals were supported but not able to complete the process due to reasons internal to their countries. Two additional participants who did not apply for the Travel Award were also funded. International Library Program and Equipment Donation Program  
 Allan Wilkinson, Curator of the

International Library Program (ILPSC), and Mohammed Zaidi, Manager of the Equipment Donation Program, reported elsewhere in this issue the state of the programs in detail. Allan mentioned the progress of polling the libraries on the active list to ensure that they were still active and able to receive journals in electronic format. Lists of the non-responders were recently sent to interested parties requesting for assistance in locating the contact person(s). Results are still in progress. Recently, EXCOM directed the ILPSC to select certain libraries to receive the collection of medical physics books published by Taylor and Francis/CRC that had been made available through the collaboration of IOMP with the publisher. Please refer to the Library report for a list of the libraries, and contact IOMP PRC chair (RayKWu@gmail.com) if you have more recent email addresses of the persons noted as non-responding.

## Policy Statements

For over five years in the making, the first two IOMP policy statements had been drafted and sent through the review process by the parent committees. IOMP Council has just voted in Beijing to approve both. Please refer to the IOMP website for full text: (<http://www.iomp.org/?q=node/5>) of the IOMP Policy Statement No. 1 - The Medical Physicist: Role and Responsibilities, and IOMP Policy Statement No. 2 - Basic Requirements for Education and Training of Medical Physicists. The two statements lay the solid ground on which other policies and guidelines may be built to help harmonize the standards and quality of work performed by medical physicists. The PRC has been assigned to form a Work Group to draft a document on Staffing Requirements. The EXCOM in

the past year has devoted some time on this topic, and the PRC has summarized the consensus in a position paper, which will be used as the initial guide to do the work. In Beijing, the World Congress has provided good opportunities and venue which several interested parties made use of to meet and exchange views and comments related to this issue, including the PRC.

## International Medical Physics Certification Board

The Task Group on Board Certification has completed the job of reviewing the model guidelines for medical physics certification programs. The International Medical Physics Certification Board (IMPCB), an organization independent of IOMP, voted to adopt the guidelines on January 11 this year. The full text is available at [www.IMPCB.org](http://www.IMPCB.org). The By-laws Committee chaired by Sean Geoghegan is finalizing the governing document. The full text of the draft will be available in the same website. In the draft, it specifies that one of the members of the Board of Directors is to be appointed by IOMP to serve for terms of three years. At present, IMPCB is working on the application for tax exempt status. Upon the approval of the By-laws, it will elect its officers, establish rules and guidelines to accredit national certification programs, and plan for accepting regular members. Welcome new committee members  
 The PRC is fortunate to have a group of 18 members (<http://www.iomp.org/?q=node/53>) willing to contribute their time, experience, and efforts for carrying forward the various tasks of the committee in the past three years. Most of the members had expressed the willingness to continue for another three years.

▶ [Continues at p. 21](#)



# Report From The IOMP Science Committee

William Hendee, Chair, IOMP Science Committee



I am writing this brief report as the new chair of the IOMP Science Committee. I was elected to this position and assumed office during the 2012 World Congress in Medical Physics and Biomedical Engineering held in Beijing in late May. It is a privilege to serve as the Science Committee chair, and I appreciate the confidence of the IOMP Council in electing me to this position.

For the past 3 years the Science Committee was chaired by Harald Paganetti, and before him by Cari Borrás. Both of these individuals were remarkable in the time and effort they devoted to the committee and to the IOMP. I hope only that I can match their dedication and time commitment to the IOMP. The IOMP owes a lot to these previous two chairs. I am now in the process of reconstituting

the committee to ensure that every member contributes substantially to the work of the IOMP. We have reports to review, meetings needing guidance, and liaisons to pursue with national and international agencies. Some committee members are appointed as at-large members, and others are nominated by regional medical physics organizations. Irrespective of the designation, each member of the committee is expected to accept a share of the workload.

At the moment I am soliciting input from committee members concerning the scientific program for The International Conference on Medical Physics scheduled for September 1-4 in Brighton, England ([www.icmp2013.org/](http://www.icmp2013.org/)). This conference is a joint venture of the IOMP, European Federation of Organizations for Medical Physics (EFOMP), and the Institute of Physics and Engineering in Medicine (IPEM). The abstract submission date is October, 2012 for papers proposed for presentation at the meeting .

On December 3-7, 2012 the International Atomic Energy Agency (IAEA), with co-sponsorship of the World Health Organization, will host an International Conference on Radiation Protection in Medicine: Setting the Scene for the Next

Decade ([www.iaea.org/meetings/](http://www.iaea.org/meetings/)). The meeting will be hosted by the Federal Ministry of Germany for the Environment, Nature Conservation and Nuclear Safety, and will be held in Bonn, Germany. I am chairing the program committee for this conference, and will look to the IOMP Science Committee for input. The IAEA has just released a draft report entitled Accuracy Requirements and Uncertainties in Radiation Therapy, and has asked the IOMP for input. I am recruiting a couple of individuals to review the report and offer comments to the IAEA. The IOMP is often asked to review reports such as this one from various agencies, including the International Commission on Radiological Protection and the International Commission on Radiation Units and Measurements. The IOMP and its Science Committee have many relationships with organizations and agencies throughout the world. At this time I am starting the process of solidifying these relationships and determining how the Science Committee can make them more effective. This is a time-consuming but important mission that promises to make medical physics and radiation protection stronger in developing and developed countries. ◀

▶ [Education & Training... Continued from p. 10](#) professionals in the EU member states. The education and training committee of the IOMP will put best effort to support educational needs of medical physicists in radiation protection. Specifically, this committee is planning to (a) support the educational efforts in underserved countries, (b) develop on-line

learning services, (c) work together with International Organizations such as IAEA and WHO to strengthen the educational development of medical physics worldwide, (d) provide recommendations and guidelines for quality teaching and learning in medical physics, and (e) cooperate with related international scientific societies and associations on

education and training topics. The education and training committee of the IOMP will work closely with members to insure their involvement and full support of these educational activities. ◀

► **Review IOMP... Continued from p. 8**

After a final discussion at the IRPA13 congress in Glasgow and approval by our Executive Committee a Statement of Collaboration is now being signed shortly. This agreement sets the frame where both partners shall act in the future. In particular the leading role of medical physicists in all issues of medical radiation protection is acknowledged.

• **International Union of Physics and Applied Physics**

When we started our term in 2009 I emphasized the need to recognize the academic face of medical physics as a discipline within the broad spectrum of Biosciences. Therefore, IOMP has to balance professional, educational and scientific aspects of Medical Physics. We strongly promoted the affiliation of the IOMP to the International Union of Physics and Applied Physics (IUPAP). It is not only to acknowledge our roots in physical sciences rather our link to IUPAP via the Affiliated Commission AC4 provides many opportunities to promote medical physics in the large family of physical sciences.

**Challenges & Perspectives**

Next year the IOMP celebrates its 50th anniversary and it is my privilege to invite you all to join the ICMP to be held at 1st-4th September in Brighton in UK not far from IOMP's birthplace Harrington. There will be time to review the history of the IOMP and I am sure looking back that long distance no doubt there is good reason to be proud of what has been achieved so far.

However, we must not lose sight of some weaknesses: on the one side our link to international organizations and to the regional and national member organizations as well has been strengthened, medical physics gained visibility and the recognition of our

profession is progressing. On the other side, questions arise whether our growing organization with more and more tasks and queries from outside can be operated professionally with a team of volunteers, mostly in charge with their own daily duties. I recommend the incoming team to think firstly how to free the Officers and the committees from the burden of extensive administrative work and second how to motivate creating ideas and promoting actions. If affordable we may consider employing professional administrative staff.

This means we have to search for measures to increase the IOMP income additional to membership dues which for good reasons should be locked. The only alternative is to increase sponsoring from outside, and preferentially by providing an appealing website for interaction with industry and the medical physics community. Some ideas have been already initiated to create a new, more modern and flexible website, however unfortunately we could not close this issue yet.

Actions to increase the income of the IOMP implicate to take measures complying with the regulations of the tax authorities. An initial concept analogous to the approach of the EFOMP is currently developed for the IOMP to transform it into a company. This has to be pursued during the upcoming term with quite some priority. Limited financial resources impact another most important field, the promotion of medical physics in developing countries. They urgently need our help in setting up proper infrastructures, in particular to provide expertise and professional development in medical physics by adapted education and training programs. The new team is encouraged to continue focusing at the developing countries, to use our well established alliances with the WHO and

the IAEA.

At the end of my report, I want to draw your attention to the expanding involvement of medical physicists in radiation protection. We have set up a Task Group "Radiation Protection" recently, and I recommend continuing with that task group. The newly established link to the IRPA signals the challenge to be much more engaged including the topic of radiological and nuclear emergencies. Medical physicists have expertise in physical and biological radiation effects, dose measurement and assessment, and therefore we have to be prepared for any kind of radiation accident.

Finally, I want to inform you about an idea which firstly has been brought up by the Latin American chapter ALFIM and its president Dr.Kodulovich: introducing an International Day of Medical Physics. Following this proposal I suggest to declare the 8th November 1895, the day of the detection of the X-rays by Wilhelm Conrad Röntgen, the International Day of Medical Physics. To celebrate this day we may consider different activities, like a worldwide webinar on medical physics topics, brochures, a special issue of the e-MPW, national panel discussion, involving health authorities, universities and the public.

Before changing the teams running IOMP I take this opportunity to thank whole-heartedly all Officers, Liaisons, Chairs and committee members for the great work, their contribution and their patience in our daily business. In particular, I thank those retiring now. I wish Prof.Kinyin Cheung, the incoming president, all success. Jump in the driver seat, find always good advisors and have a successful journey to new destinations for a prosperous future of the IOMP. ◀

## From the Awards and Honours Committee

Tomas Kron, Peter MacCallum Cancer Centre, Melbourne Australia



At the Medical Physics & Biomedical Engineering World Congress in Beijing I assumed my new role as chair for the IOMP Awards and Honours Committee. My first and most important task is to thank our previous chair, Don Frey, who has served as chair from 2008 to 2012. Don and the committee have put a lot of new ideas in motion, of which I will detail one a bit more below. Doing this, he was supported by an outstanding group of individuals who have served on the committee: Slavik Tabakov, Anchali Krisanachinda, Brian Thomas, Deborah G. van der Merwe, Shada Wadi-Ramahi and María-Ester Brandan. Our thanks to all of them for their work.

We have now formed a new committee: *María-Ester Brandan (México,*

*ALFIM), KY Cbeung (Ex-officio: IOMP president), Ibrahim Dubaini (Qatar, MEFOMP), M. Saiful Huq (USA), Taofeeq Ige (Nigeria, FAMPO), Tomas Kron (Australia, Chair), James Lee (Singapore, AFOMP, SEAFOMP), Peter Sharp (UK, EFOMP), Slavik Tabakov (Ex-officio: IOMP vice president), Debbie VanDer Merwe (South Africa).*

In doing this we have tried to maintain some continuity, have good regional representation and at the same time include medical physicists from different sub-specialties. The key task of the committee is to administer the awards and honours program of the IOMP. We would like to congratulate the awardees, who received awards at the World Congress in Beijing: Dr Cari Boras received the 2012 IUPESM Award of Merit recognising Medical Physicists and Biomedical Engineers who have established distinguished careers and contributed to the advancement of the profession. Dr Ahmed Meghzifene was awarded the IOMP Harold Johns Medal for leadership in medical physics education. Professor Charles Mistretta was awarded the Marie Sklodowska-Curie Award for a distinguished career contributing to the

advancement of Medical Physics research and teaching. He will receive his award at the International Conference of Medical Physics next year in Brighton.

Where are things heading? We are working on defining the criteria for IOMP fellowship as per a proposal by Don Frey and a motion by IOMP council. In brief the proposal was to create a new category of fellowship of IOMP to recognise service for the IOMP. It is planned to launch the FIOMP at the 50th Anniversary of IOMP (Brighton 2013) – one of the many ways to celebrate this important event.

We are also discussing how we can make Medical Physicists more visible in the community through awards and help to recognise young members who have made outstanding contributions. There are some discussions on how we can better work with IUPESM to provide recognition for young medical physicists presenting at the World Congress events in the future. We hope to implement a Young Investigator Awards in Medical Physics at the World Congress 2015. As all this will require some resources, we are starting to look for sponsorship to get the necessary funds to recognise a larger number of colleagues who deserve it. ◀

## Library program overview – July 6, 2012

### Prepared by the PRC and ILPSC

The library program started in 1987 with a collection donated by Gammex and Wisconsin Innovarian Ltd. The program has been managed by AAPM. It expanded through the years with additional donors including individuals and AAPM. Through the work of many people, the program became a joint program sponsored by AAPM and IOMP, and managed by the International Library Program Subcommittee (ILPSC) under the Professional Relations Committee (PRC). The current Curator is Allan Wilkinson of Ohio.

The library program serves 43 developing nations through the

maintenance of 75 active libraries. There were two new libraries established in the 2010. They are in Hefei, China, and Kyiv, Ukraine. In 2011, the library in Columbia was established. Currently we are working on establishing a new library in Estonia. All active libraries receive a free copy of the SRP quarterly journals. In recent years since the Medical Physics journal is available to subscribers via the web, many members of the AAPM have donated their hardcopy Medical Physics journals to the library program. The journals were sent to the following countries: ▶ [Continues at p. 16](#)



# Report of the European Federation of Organisations for Medical Physics (EFOMP)

## Prof Peter Sharp, EFOMP President

One of the aims of EFOMP, as set out in its constitution, is to bring about and maintain systematic exchange of professional and scientific information, formulate common policies, and promote education and training. There are a number of routes by which we do this and recent activities have included:

- The setting up of an EFOMP working group in mammography. The objective of this working group was to write a document on QC in Digital Mammography covering commissioning and routine tests with the aim to be understandable also to less experienced professionals in the mammography field. Nowadays, the group includes people from 22 countries. Document preparation has started, beginning with the chapter on test procedures. The first partial draft covering quality controls of the x-ray source, the automatic exposure control and the image detector, has been distributed within the group.
- Contributing to scientific and professional sessions at national and international meetings. During the last ESTRO 31 Conference in Barcelona, EFOMP and ESTRO organized an important Joint Session on “Networking in radiotherapy: new technology for the future”. EFOMP also makes an important contribution to the physics programme of the European Congress of Radiology. This year a workshop on “New Technology in Diagnostic Radiology: Frontiers in Interventional Radiological Imaging” was organized.
- Holding a joint congress on medical physics with the Société Française de Physique Médicale. The topics, in oral and poster presentations, included IMRT, dosimetry verification, new topics in radiotherapy particularly the use of MR imaging in planning, IGRT, a special session on hadron therapy, imaging issues in radiology and nuclear medicine and an EFOMP session on Medical Physics in Europe incl. workshop on legislative processes.
- Producing a slide show that illustrates the breadth of health-care work undertaken by Medical Physicists, available on the EFOMP website under “Recent News”. With the development of EFOMP into a company under

UK law we have been able to be a partner in a number of projects that are relevant to the development of Medical Physics in Europe. For example, in April we took part in the MEDRAPET project workshop.

The aim of the Workshop was to present the current status, difficulties and future opportunities in the field of education and training in radiation protection and to provide data for the development of the Guidelines on Radiation Protection Education and Training of Medical Professionals in the European Union. Education is an important part of our work and each year we support the European School of Medical Physics. This takes place in Archamps, on the French-Swiss border. It offers quality training in aspects of Medical Physics, from medical imaging to radio- and brachy-therapy. Physics graduates recently or soon to be qualified as medical physicists or those working in an environment of biomedical research can participate. EFOMP sponsors a bursary for novice medical physicists who are members of a National Member Organization of EFOMP.

**The VI Annual Conference of EFOMP will be held in collaboration with the 11th National Conference of the Bulgarian Society of Biomedical Physics and Engineering in Sofia from 18th – 20th October 2012.** The invited speakers will present novel concepts and innovations related to the role and contributions of medical physics and biomedical engineering on the development of contemporary medicine [www.empec2012.bsbspe.org](http://www.empec2012.bsbspe.org) ◀



*EFOMP President P.Sharp, Scientific Committee Chair A. Torresin and P. Colombo during ECR 2012*

► Library Program... Continued from p. 13

Argentina, Brazil, Brunei Darussalam, Bulgaria, china, Colombia, Costa Rica, Egypt, Hungary, India, Iran, Morocco, Myanmar, Namibia, Nepal, Nigeria, Pakistan, Russian Federation, Sri Lanka, Sudan, Thailand, Turkey, and Ukraine in the past. The most recent sets were sent to Pakistan, Costa Rica, and Iraq. Several offers of old journals are still outstanding awaiting library choices. In 2011, we are making the transition to supplying current issues of Medical Physics and the SRP Journal in electronic format.

Recently at the World Congress in Beijing, the Executive Committee asked the IPEM staff to take an inventory of the IOMP Medical Physics and Biomedical Physics Series published by Taylor and Francis/CRC.

The free books were presented to IOMP per contractual agreement between IOMP and the publisher. The ILPSC has been asked to coordinate the distribution of the books. The plan is to send the new books to active libraries on a first come first served basis.

In spring 2010, all members in the active library list were contacted by email. For those without response, a second email was sent. As of June, 2012, about 25% responded. Plans are ongoing to increase the visibility of the library program on the IOMP and AAPM websites so that information regarding “missing” libraries might be forthcoming and new libraries encouraged to form.

Besides the hard copy libraries, ILPSC would like to publicize many other resources available.

1. The EMITEL Medical Physics Encyclopaedia (<http://www.emitel2.eu/emitwwsql/index-login.aspx>), which is easily accessible via

[www.iomp.org](http://www.iomp.org). Please contact Dr. Slavik Tabakov ([slavik.tabakov@emerald2.co.uk](mailto:slavik.tabakov@emerald2.co.uk)) for comments.

2. The Physics in Medicine and Biology is freely available to libraries and institutions, and individuals get online access through their institution / library whose IP address(es) are registered by IOPP. Please contact Dr. Peter Smith ([peterhsmith@btinternet.com](mailto:peterhsmith@btinternet.com)) for details.

3. AAPM – PIP program.

AAPM has a Partner-in-Physics (PIP) program which provides free Corresponding Membership or International Affiliateship to medical physicists

residing in developing countries. A PIP has all the benefits of a Full Member except voting power and privilege to serve in committees. They will get hardcopy or electronic subscription of the Medical Physics Journal, all AAPM task group reports, and have access to the virtual library collection of AAPM. As of June, 2012, there are a total of 117 PIPs, 70% receives only electronic Medical Physics. Please contact Dr. Raymond Wu ([RayKWu@gmail.com](mailto:RayKWu@gmail.com)) for details.

4. AAPM – DCEA program

AAPM established the Developing Country Educational Associates (DCEA) Program in 2006 to provide medical physicists residing in developing countries free access to medical physics publications and educational materials via the internet. The only requirement to qualify for this free program is that the medical physicist must reside in one of the countries recognized by AAPM and posted at the AAPM Recognized Developing Countries webpage. After obtaining the Username and password, the user will be able to access the educational materials including AAPM Virtual Library, AAPM Summer School Proceedings, and AAPM Task Group Reports. Currently there are about 580 registered DCEA's. For details, visit the webpage at

<http://www.aapm.org/international/default.asp>

5. AAPM - free subscriptions to the Medical Physics Journal

As part of the negotiations for the IOMP to be a co-sponsor of the journal Medical Physics, the AAPM agreed to provide up to 100 free electronic subscriptions to the journal for physicists in developing countries. With the assistance of the AAPM International Affairs Committee, the IOMP and the IAEA, 70 individuals in developing countries have been identified to date to receive the free subscriptions.

6. American College of Medical Physics journal – JACMP (<http://www.jacmp.org>)

AAPM has recently merged with ACMP and publishes an online Journal of Applied Clinical Medical Physics (JACMP). It is co-sponsored by IOMP and by the Canadian Organization of Medical Physicists. It is an open journal that all abstracts and full texts are free to download. See the link below for more details:

<http://www.iomp.org/?q=node/48> ◀

List of current library locations (75 Libraries in 43 Countries)

Algeria	Algiers
Argentina	Bariloche
Argentina	Buenos Aires
Brazil	Rio de Janiero
Brazil	Sao Paulo
Brunei	Berakas
Bulgeria	Sofia
Cameron	Dualo
China	Beijing
China	Guangzhou
China	Shanghai
China	Xian
Columbia	Bogota
Costa Rica	San Jose
Cyprus	Nicosai
Dominican	Santo Domingo
Ecuador	Guayaquil
Ecuador	Quito
Egypt	Alexandria
Egypt	Cairo
Estonia	Tallinn
Georgia	Tbilisi
Hungary	Budapest
India	Bangalore (2)
India	Calcutta
India	Cuttack
India	Jaipur
India	Ludhiana
India	New Delhi
India	Sriangar
India	Vellore/Madras
Indonesia	Bandung
Indonesia	Jakarta
Iran	Tehran
Jamaica	Montego Bay
Kenya	Nairobi
Lebanon	Beirut
Mexico	Mexico City
Morocco	Rabat
Myanmar	Yangon
Namibia	Windhoek
Nepal	Bharatpur
Nicaragua	Managua
Nigeria	Enewi
Nigeria	Enugu
Pakistan	Islamabad
Pakistan	Lahore
Pakistan	Mardan
Pakistan	Peshawar
Peru	Lima
Philippines	Manila
Poland	Poznan
Poland	Warszawa
Poland	Wroclaw
Russia	Moscow
Sri Lanka	Batticaloa
Sudan	Khartoum
Tanzania	Dar-Es-Salaam
Thailand	Bangkok (2)
Thailand	Chiang Mai
Trinidad	Champs Fleurs
Tunisia	Tunis
Turkey	Ankara
Turkey	Istanbul
Ukraine	Kiev
Vietnam	Dalat
Vietnam	Hanoi
Zambia	Mporoskoso
Zimbabwe	Bulawayo

# Middle East Federation of Medical Physics (MEFOMP) Summary Report

Ibrahim Duhaini, President of MEFOMP



## Introduction

The establishment of Middle East Federation of Medical Physics (MEFOMP) is part of the IOMP effort to organize regional medical physics societies under its umbrella to further enhance and improve the status of medical physics across the Globe.

## Main Goals of MEFOMP

- Promote advancement of medical physics in the Middle East Region.
- Educate and train local society members on new procedures and technologies
- Encourage exchange of expertise and information among societies
- Organize regional conferences and symposia.

**Logo:** The Middle East Region map with the Atomic Structure representation.

## Officers of MEFOMP

- President: Mr. Ibrahim Duhaini, Lebanon
- Vice President: Dr. Seyed Mahdavi, Iran
- Secretary General: Dr. Ahmad Oteif, KSA
- Treasurer: Mr. Adel Mohamad, Bahrain

## Representatives of MEFOMP:

- Bahrain - BSMPBE - Lama Sakhnini
- Iran - IAMP - Seied Rabi Mahdavi
- Iraq - IMPS - Nabaa Naji
- Jordan - JAMP - Shada Ramahi
- KSA - SAMPS - Adnan Al-Watban
- Lebanon - LAMP - Ibrahim Duhaini
- Oman - OMPS - Afkar Al Farsi
- Qatar - QMPS - Huda Al Naemi

- Syria - SAMP - M'hd Hassan Kharita
- UAE - EMPS - Jamila S. Alsuwaidi
- Kuwait and Yemen - Not yet

## Challenges in MEFOMP

1. Education and Training of MP
2. Recognition of the profession of Medical physics at the national level
3. Accreditation of academic and training programs.

## Some Activities of MEFOMP

1. WC 2009 Annual Meeting, September 2009, Germany (Official MEFOMP elections)
2. Radiation Safety Course, Oct. 2009, UAE.
3. IRPA Radiation Protection Workshop, January 2010, Egypt.
4. ICRM International Conference on Radiation Medicine, March 2010, KSA.
5. Radiation Safety Course, 2010, Lebanon.
6. Radiation Safety Course, 2010, Lebanon.
7. ISEP-AAPM, the 22nd King Hussein Cancer Center Conference, 2010, Jordan.
8. Radiation Safety Course, 2010, UAE.
9. ICRP 105 Translation Project Meeting, October 2010, Tunisia.
10. IMRT & IGRT ADAC Planning Workshop, December 2010, Lebanon.
11. Radiation Safety Course, Dec 2010, KSA.
12. BMPS International Conference on Medical Physics in Radiation Oncology and Imaging, March 2011, Bangladesh.
13. Radiation Safety Course, 2011, UAE.
14. Radiation Safety Course, April 2011, UAE.
15. Radiation Safety Course, 2011, Lebanon.
16. AAEA, Authorization and Inspection of Radiation Sources in Radiotherapy, May 2011, Tunisia.
17. Iraqi Medical Physics Society Training Course, June 2011, Erbil-Iraq.
18. Radiation Training Course, 2011, KSA
19. First MEFOMP Workshop & Conference, November 2011, Iran

*Shiraz University of Medical Sciences welcomed more than 750 participants for the 1st MEFOMP International Conference on Medical Physics that*

*was held from 2 to 4 of November 2011. Among 450 papers that were accepted, 90 presented orally and 360 as posters. One of the conference unique features was the non-Iranian active participation. Conference was the host for about 50 distinguished scientists from countries other than Iran. Such as Prof. Fridtjof Nüsslin (the President of IOMP), Prof. Barry Allen (Past President of IOMP), Prof. Indra Daas, Prof. Ali Meigoni, Mr. Ibrahim Duhaini (President of MEFOMP) and Prof. Ismael Parsaie. As the information exchange among world famous scientists and young scientists/ students was the main goals of the conference; a workshop entitled "Advanced Methods of Radiotherapy" was held on the 1st of November 2011, one day before the conference. The major achievements of this conference were the following:*

1. Strengthening the link between Iranian medical physicists and their counterparts abroad.
2. Establishing the Global Center for Advanced Research in Medical Physics and Biomedical Engineering. GCARMPE which is financially supported by a multi national NGO's.

*Attracting some of the world famous medical physicists for membership in the editorial board of the Journal of Biomedical Physics and Engineering.*

## Call for future Actions:

1. Strengthen the number and level of academic programs throughout MEFOMP Member states.
2. Establish regulations for clinical training of Medical Physicists.
3. Issue certifications for Medical Physicists in the region.

Finally, MEFOMP will continue to work closely with all its Sister organizations in IOMP and all other related organizations such as IAEA, AAPM, ACMP, WHO, ESTRO, ASTRO, ...in order to enhance the development of the medical physics profession world wide. ◀



## 20 years ICTP College on Medical Physics

Slavik Tabakov, Co-Director of ICTP College on Medical Physics,  
Vice-President IOMP



During 2012 the International College on Medical Physics at ICTP, Trieste, Italy, celebrates its 20th anniversary. This activity has made ICTP one of the important 'homes' for many young colleagues and renowned scientists in Medical Physics.

From the beginning of the regular International College on Medical Physics at ICTP, the focus of the activity had been toward developing countries. The College has always been supported by eminent specialists from various countries, many of them being senior officers of AAPM and IOMP. During the period this regular (now- biannual) activity of the ICTP has educated more than 1000 young medical physicists mainly from developing countries. The College specially concentrates its activities on Medical Imaging Physics. In fact ICTP (Abdus Salam International Centre for Theoretical Physics) has hosted a number of Medical Physics activities, starting in 1982 with the International Conference on the Applications of Physics to Medicine and Biology and continuing with many other Conferences, including one of the EFOMP Conferences in 1996, the First International Conference on Medical Physics Training (EMERALD) in 1998 and the EMITEL Encyclopaedia

Conference in 2008 (including almost all IOMP Officers). ICTP operates under the aegis of UNESCO and IAEA and naturally hosts many IAEA Workshops and Symposia. In 2005 ICTP was the Co-Organiser of the World Conference on Physics and Sustainable Development in Durban, South Africa, where one of the main directions for applied physics in the XXI century was voted to be Physics in Medicine.

From the beginning, cornerstones for the ICTP involvement in Medical Physics were Luciano Bertocchi (then Deputy Director of ICTP) and Anna Benini (then IAEA Officer). Additionally, a number of prominent professionals were engaged with the College on Medical Physics, including John Cameron (USA), Sergio Mascarenhas (Brazil), Perry Sprawls (USA) and Slavik Tabakov (UK). The current Co-Directors include also Franco Milano (Italy) and George D Frey (USA), while the Hospital training is organised by Mario De Denaro (Italy). During the last decade the Governors of ICTP and the Directors Prof. Sreenivasan and Prof. Quevedo extended special support to the College and provided funding for all participants from developing countries. The International College on Medical

Physics is one of the most oversubscribed activities of ICTP. Each College participant receives a full set of training and teaching materials and a number of them have already initiated new Medical Physics courses/workshops in their own countries. Many MSc and Training programmes in Medical Physics in Africa, Asia and South America have been underpinned by these materials and are led by former ICTP students.

The IAEA has also hosted many of its Medical Physics training courses in the ICTP – spanning from Radiation Protection and Diagnostic Radiology to the most recent developments in Radiotherapy. To further expand its activities ICTP planned a special External College in India (2007) with Dr Perry Sprawls and Dr S. D. Sharma as Academic Directors. Additionally top students from the developing countries benefit as ICTP Associate Members, and take part in the Programme of Research and Training in Italian Laboratories (TRIL).

The current ICTP Medical Physics College 2012 includes young specialists from 40 countries, and provides accommodation and travel support to the majority of those from developing and low income countries. ◀



*ICTP College on Medical Physics, Trieste, 2010*

# The e-Learning Modules EMERALD and EMIT Available for Free Use

**Slavik Tabakov, Coordinator of EMERALD and EMIT, Vice-President IOMP**

During the period 1998 – 2004 the EU projects Consortia EMERALD and EMIT published 5 volumes with e-Learning materials to support the training in Medical Physics. These materials are now widely used all over the world. The EMERALD project developed e-Learning materials in 3 areas of Medical Physics (X-ray Diagnostic Radiology, Nuclear Medicine and Radiotherapy), while the EMIT project developed e-Learning materials in 2 further areas - Ultrasound and Magnetic Resonance Imaging. The modules include specific training tasks and thousands of related images, now used in some 65 countries. EMERALD developed the first e-books in Europe, and the later EMIT project used the same web-platform for the next 2 e-books. These innovative projects and their global impact brought to Medical Physics the inaugural award for education of the European Union – the Leonardo da Vinci Award.

Over the years these e-Learning materials were commercially available through King’s College London and from this year they are available for free use over Internet through the web address: <http://emerald2.eu/cd/Emerald2/>

The modules will now be subject to update through IOMP and its societies. The first project to address this is between King’s College London, UK and the University of Sao Paulo, Brazil. Each of the 5 e-books has a specific Training Timetable, showing the main topics for training, the training tasks, the time for their completion and the competencies these develop. Many Universities use part of these materials and images for lecturing and laboratory exercises.

The main subjects of the 5 modules have the following structure:

- X-ray DIAGNOSTIC RADIOLOGY PHYSICS
- NUCLEAR MEDICINE PHYSICS
- RADIOTHERAPY PHYSICS

- DIAGNOSTIC ULTRASOUND IMAGING
- MAGNETIC RESONANCE IMAGING

The partners in the projects include a Consortium of Universities and Hospitals: King’s College London; University of Lund; University of Florence; King’s College Hospital NHS Foundation Trust; Lund University Hospital; Hôpital Albert Michallon Grenoble, Portuguese Oncological Institute Francisco Gentil; International Centre for Theoretical Physics (ICTP) Trieste; Centre Alexis Vautrin, Nancy; St James's Hospital, Dublin; Northern Ireland Medical Physics Agency, Belfast; Prague Technical University; Inter-University Medical Physics Centre, Plovdiv, and also the European Federation of Organisations for Medical Physics (EFOMP) and later the International Organisation for Medical Physics (IOMP).

All colleagues who would like to contribute to the above training modules by developing additional tasks, updating existing tasks, or adding images and other material should contact the Co-ordinator at [slavik.tabakov@emerald2.co.uk](mailto:slavik.tabakov@emerald2.co.uk). ◀



EMERALD/EMIT e-Learning materials online



# History Sub Committee Report to IOMP Council World Congress 2012, Beijing, China

**Azam Niroomand-Rad, Chair, History Subcommittee**



**History:** It is important to collect and archive history and heritage of IOMP in a comprehensive manner for the benefit of future medical physicists worldwide. This is especially essential since IOMP does not have a permanent office and Officers change every three years. Therefore all IOMP documents have been kept in various files and boxes and have been shipped and handed over to the next Secretary General. As the result office of Secretary General was and still is IOMP Office. In 2008, some IOMP members including myself, Colin Orton and Slavik Tabakov recognized the need for establishment of a Committee to collect and preserve IOMP history. This included, but not limited to, recognizing individuals who have made contributions to the advancement of medical physics and our profession particularly by their services in IOMP as described:

- To recognize the IOMP members who have made major contribution(s)
- To acknowledge the contributions of EXCOM (P, VP, PP, S-G, Treasurer)
- To acknowledge the contributions of Committee Chairs
- To acknowledge the contributions of Editors of MPW
- To acknowledge the contributions of Curator, International Library Program
- To digitally archive photographs from

the past and present WCs, ICMPs, ISEPs, Workshops, Endorsed or Sponsored Courses

- To interview prominent members.
  - To digitally archive interviews
- However, despite our proposal for establishment of a standing History Committee, EXCOM recommended establishment of a History Sub Committee as part of Publication Committee. Subsequently their recommendations was approved by Council at WC-2009 in Munich, Germany. This has created some difficulties for us to perform our tasks. As a Sub Committee under Publication Committee, we are not in direct contact with Officers and Committee Chairs to extract information and data for historical purposes. We hereby strongly suggest that History SC should become a standing committee, par to other standing committees.

**Activities:** Since 2009 members of History Sub Committee (C. Orton, S. Tabakov and A. Niroomand-Rad (Chair)) have collected and compiled various IOMP historical data in 27 Tables:

- Table 1: IOMP Officers (P, VP, PP, S-G, Treasurer)
- Table 2: IOMP Member Countries
- Table 3: International Union on Physical and Engineering Sciences in Medicine(IUPESM) Officers (P, VP, PP, S-G, Treasurer)
- Table 4: IOMP Affiliated Regional Organizations and Member Countries
- Table 5: IOMP Corporate Members
- Table 6: International Conferences on Medical Physics (ICMP) and World Congresses on Medical Physics and Biomedical Engineering (WC)
- Table 7: International Scientific Exchange Programs (ISEP), Co-sponsored

by AAPM

- Table 8: IOMP Sponsored Meetings (Not including ICMP, WC, ISEP)
- Table 9: Medical Physics World (MPW) Editors and Editorial Boards
- Table 10: Outline of MPW Reports, Announcements and Information
- Table 11: IOMP Adhering National Organizations as enlisted in MPW
- Table 12: MPW Advertisements
- Table 13: Membership of Awards and Honors Committee (AHC)
- Table 14: Awards Recipients (including IUPESM and IUPAP)
- Table 15: Membership of Education and Training Committee (ETC)
- Table 16: Membership of Science Committee (SC)
- Table 17: Membership of Developing Countries Committee (DCC) and Professional Relations Committee (PRC)
- Table 18: International Library Programs (ILP), Co-Sponsored by AAPM
- Table 19: Membership of Publication Committee (PC)
- Table 20: Membership of Nomination Committee (NC)
- Table 21: Membership of Rules Committee (RC)
- Table 22: Membership of Finance Committee (FC)
- Table 23: Membership of International Commission on Medical Physics (ICOMP) Affiliated with International Union of Pure and Applied Physics (IUPAP)
- Table 24: Membership of History Sub Committee (HSC)
- Table 25: AAPM Delegates to IOMP
- Table 26: Membership of Industrial Affairs Committee (IAC)
- Table 27: List of Video Interviews of Prominent Physicists ▶



► We have video interviewed prominent medical physicists who have served IOMP:

Prof. Fridtjof Nusesslin (Germany) & Prof. David Twaites (UK)

Prof. Andree Dutreix (France)

Prof. Anchali Krisaanachinda (Thailand), Prof. Peter Smith (UK), Dr. Anna Benini (Italy),

Dr. Inger Lena Lamm (Sweden), Prof. Stelios Christofides (Cyprus)

By: Prof. Colin Orton (USA)

By: Prof. Azam Niroomand-Rad (USA)

By: Prof. Slavik Tabakov (UK)

*Lastly we suggest that these information be placed at IOMP new web site under IOMP History so it can easily be accessed. They should also be updated periodically.*

*Your comments and input in updating IOMP historical data are appreciated. Please send them to the History Subcom. Thank you. ◀*

► **Library Program...** Continued from p. 13 New members have been recruited and their names will be included in the website when it is updated. We are in need of more medical physicists who are interested and have the passion and time to serve according to the Terms of Reference. Please contact the Chairman of the committee to volunteer. Plans for the Immediate Future One of the goals of IOMP is on improving the quality of medical physics practice. Although this focus applies to all our member countries, it is particularly important in less developed countries. Employment conditions for all medical physicists should include the opportunities for continuing education, as well as the requirement to do so. In the coming years PRC will work with IAEA and WHO to strengthen medical physics with focus on professional aspects as described above. IOMP plans to lead the

effort to draft staffing requirement guidelines for medical physicists, preferably in collaboration with other international bodies including IAEA and WHO. PRC will encourage regional MP organizations and commercial vendor to support scientific meetings organized by national societies or regional federations. Some medical physicists from the least developed countries will continue to rely on financial assistance to attend well organized scientific meetings. PRC will champion travel assistance programs such as the Travel Awards to attend the World Congress 2012 in Beijing. PRC will continue to work on guiding the formation of the International Medical Physics Certification Board, which will help further improve the quality of medical physics practice. As determined by the availability of resources, the Library Program and the Used Equipment Donation Program will continue to

function to benefit developing countries. Other opportunities to serve the member countries will arise and the PRC will be here to take on the challenges.

In summary, the PRC will:

- Work on proper classification of the profession called Medical Physics and its recognition in member countries and international bodies
- Promote the formation of national medical physics societies
- Continue efforts to write policy statements and standards
- Promote the concept of board certification to improve the quality of clinical practice
- Strengthen the ISEP program, the Library Program and Equipment Donation Program
- Encourage funding of travel assistance programs to help medical physicists from developing countries.
- Sponsor/Endorse scientific meetings with special focus to benefit developing countries ◀



ICMP 2013 organising committee The International Organization of Medical Physics (IOMP), the European Federation of Organisations for Medical Physics (EFOMP), and the Institute of Physics and Engineering in Medicine (IPEM) are delighted to invite you to attend the International Conference on Medical Physics 2013 (ICMP 2013) This is going to be an exciting and significant event in the Medical Physics calendar, and will take place in Brighton from the 1st – 4th September 2013 at the Brighton Conference Centre, Brighton.

## Diagnostic Physics Course, Patras, Greece, June 17-20, 2011

### Report on the 2011 AAPM International Scientific Exchange Program (ISEP), George Kagadis (Host Co-Director) & Eugene Lief (AAPM Faculty)

The AAPM-ISEP workshop in Diagnostic Physics was held on June 17-21, 2011 at Patras University in Patras (Greece). The course organizers were Prof. George Nikiforidis and Prof. George Kagadis from the University of Patras, Greece (local organizers) and Prof. Mahadevappa Mahesh (AAPM-ISEP). The main topics included Medical Imaging and its Quality Metrics, Digital Imaging, Imaging Modalities, Patient Dose and its Reduction, Radiation Safety, Image Display and Perception, Nuclear Medicine, Shielding Calculation, Quality Control, and Medical Physics Certification. Nearly 21 hours of academic material were delivered at Patras House of Sciences Center – new and beautiful building with interesting scientific exhibits. There was also a visit to the Patras University Hospital where the attendees were shown the classic and modern clinical equipment. More than 90 participants registered for the course. Their experience range was very broad; from students to senior physicists. They represented 10 countries of Europe, Asia, and America. The course faculty were Distinguished Professor William Hendee from Medical College of Wisconsin, Professors Donald Frey from Medical University of South Carolina, Anthony Seibert from the University of California Davis, Mahadevappa Mahesh from Johns Hopkins University School of Medicine, Drs. Habib Zaidi from Geneva University Hospital and Eugene Lief from White Plain Hospital – Marsden Medical Physics.

The faculty had a difficult task of giving talks interesting to a broad spectrum of Diagnostic Physicists attending the course. Nevertheless, the course reached its goal. The lectures were

well-attended and were highly interactive. The attendees asked many questions and continued to communicate with the faculty and with each other in their free time. Many participants were interested in CAMPEP credits which were offered to them. The University of Patras has well-established traditions in Medical Physics. Several University Rectors were Medical Physicists, including Professor G. Panayiotakis who is Rector now. One of the organizers of this course Professor Nikiforidis has served as a Dean of the School of Medicine. Several world-famous physicists had been working here. The world-famous graduate program here awards 12-15 MS degrees and 6-8 PhD diplomas in Medical Physics annually. Unfortunately, during the course one of the world legends in Medical Physics, Professor Emeritus Basil Proimos, died in a car accident at his home town on the island of Crete. This sad news along with Professor Proimos short biography and achievements were announced to the participants to the participants by Professor Nikiforidis.

Overall, the course was a success. The material was comprehensive and relevant to the needs of practicing medical physicists. Communication between the participants and faculty was very efficient. The social program included an opening reception and a gala dinner. Transportation between the hotel and the Science Center was perfectly arranged. All that was possible because of tireless efforts of local organizers: Professor George Nikiforidis and Professor George Kagadis from Patras University. Their work was appreciated by the AAPM and was acknowledged by special plaques provided to the local organizers by the AAPM. ◀



*AAPM faculty: Mahadevappa Mahesh, Habib Zaidi, William Hendee, Tony Seibert, Eugene Lief and Don Frey with local hosts and co-directors George Kagadis and George Nikiforidis some of the workshop attendees.*



*AAPM President Tony Seibert, William Hendee, Mahadevappa Mahesh with the local hosts and co-directors of the workshop Dr George Kagadis and Prof George Nikiforidis after presenting special recognition plaques.*

# Workshop on Physics of Advanced Radiotherapy Tata Memorial Hospital, Mumbai; India, 17-19, March, 2011

## Report on the 2011 AAPM International Scientific Exchange Program (ISEP)

**Dr. D. D. Deshpande (Organizing Secretary AMPI)**

**Dr. Jatinder R. Palta (Course Content Coordinator AAPM)**

**Objective:** To update the knowledge of Medical Physicists in India about the advanced radiotherapy planning and delivery techniques.

**Goals:** In India large number of centers have come up in last decade and are equipped with the advanced state of art machines and are practicing techniques like IMRT, IGRT, rotational IMRT, motion management techniques etc. However, Physicists & other team members need to be updated with various aspects of these techniques in order to achieve the precision in the treatment.

American Association of Physicists in Medicine (AAPM) supported a workshop focusing on these advanced techniques under International Scientific Education Program (ISEP). Departments of Medical Physics and Radiation Oncology at Tata Memorial Hospital, Mumbai hosted this workshop titled, "Physics of Advanced radiotherapy" from 17-19 March 2011.

**Scientific Program:** The Scientific Program was designed in consultation with the local host. The faculty members from AAPM included; Drs. Howard Amols, M. Saiful Huq, Daniel Low, Radhe Mohan, Jatinder Palta, S. Rao and David M. Shepard. From India experts were Drs. D Deshpande, P.S. Negi, Paul Ravindran, S.D. Sharma, and Sathyanarayan.

The faculty reviewed and discussed the implementation of advanced radiotherapy technologies in India both from clinical and physical aspects. There were didactic lectures and discussion sessions on advanced Imaging, IMRT, IGRT, adaptive radiotherapy, motion management, dose calculations, quality assurance, and safety.

In the IGRT session, various commercial solutions and associated challenges were discussed. There was a separate session on QA of all advanced techniques. The clinicians from the host institution discussed their perspective of precision in clinics. The session on dosimeters dealt with Commissioning & QA issues of treatment planning systems and computer controlled treatment delivery. A separate session on small field dosimetry was also conducted. The workshop also included practicum sessions in the afternoons. There were 4 work stations for 2 days. On the first day 4DCT Simulator, Eclipse TPS Planning system were demonstrated in four groups, followed by IGRT demonstration on Varian Trilogy and motion management on Novalis TX. Tomotherapy QA Process was demonstrated. A special session; "Meet the expert", provided an opportunity for the participants to closely interact with the invited faculty members.

In the concluding session, dosimetry audit in US and India were discussed. There was some discussion on AAPM and AMPI collaboration in the future.

**Feedback from Participants:** Overall the delegates were extremely satisfied with AAPM faculty lectures and the content of the course. The majority opinion was to conduct such workshop on a frequent basis; may be yearly or biannual. The participants, who were new to the advanced technology, were very satisfied with on-site practical demonstrations by the host faculty members and the visiting faculty members from AAPM. The informal and personal interactions amongst participants and AAPM faculty during the afternoon practicums were very well received. ◀





# IOMP Policy Statement No. 1

## The Medical Physicist: Role and Responsibilities

### 1 Introduction

This policy statement provides general guidelines for member organizations in defining the role and responsibilities of medical physicists. It serves as a reference for medical physics professional organizations and health care authorities in their planning and development of the medical physics services in a clinical environment, and for academic institutions for education and training of medical physicists. This document should be read in conjunction with IOMP Policy Statement No. 2 (Basic Requirements for Education and Training of Medical Physicists).

### 2 Definitions

#### 2.1 Medical Physics

Medical Physics is a branch of Applied Physics, pursued by medical physicists, that uses physics principles, methods and techniques in practice and research for the prevention, diagnosis and treatment of human diseases with a specific goal of improving human health and well-being. Medical physics may further be classified into a number of sub-fields (specialties), including the following <sup>1</sup>.

##### 2.1.1 Radiation Oncology Physics

##### 2.1.2 Medical Imaging Physics

##### 2.1.3 Nuclear Medicine Physics

##### 2.1.4 Medical Health Physics (Radiation Protection in Medicine)

##### 2.1.5 Non-ionizing Medical Radiation Physics

##### 2.1.6 Physiological Measurement

#### 2.2 Medical Physicist (MP)

2.2.1 Medical physicists are professionals with education and specialist training in the concepts and techniques of applying physics in medicine. Medical Physicists work in clinical, academic or research institutions.

2.2.2 Medical physicists working in clinical environment are health professionals, with education and specialist training in the concepts and techniques of applying physics in medicine, competent to practice independently in one or more of the subfields (specialties) of medical physics.

This document is focused on medical physicists working as health professionals. The requirements for education and specialist training of medical physicists working as health professionals are set out in IOMP Policy Statement Number 2. Competence to practice independently as a health professional is demonstrated by Certification by a national or an international professional certification body and/or Registration (or Licensing) by the State. Further guidance on this is given in IOMP Policy Statement Number 2.

#### 2.3 Certified Medical Physicist <sup>2</sup> (CMP)

A CMP is a medical physicist who has been certified by a national or an international professional certification body to have the competence to practice independently in one or more sub-fields of medical physics.

#### 2.4 Further Professional Classification of MPs

Depending on operational needs, there may be other classification of MPs, e.g., Trainee/Resident Medical Physicist, Consultant Medical Physicist, etc.

#### 3 Roles and Responsibilities of Medical Physicists

Medical physicists are mainly involved with the application of medical physics principles and techniques for treatment and diagnosis of human disorders, illnesses and disabilities, and the protection of the patients, staff and members of the public from ionizing and non-ionizing radiation hazards. The role and responsibilities of medical physicists may be oriented toward clinical service (which includes technical and radiation safety aspects), management, education, and research and development. Some key roles and responsibilities of medical physicists are listed in the Appendix. The principal functions and responsibilities of medical physicists can be summarized as follows:

- Establishment and implementation of health care technologies with emphasis on patient diagnostic and therapeutic procedures.
- Supervision of radiation protection and safety programs
- Measurement of radiation
- Establishment, implementation, and supervision of quality assurance programs
- Optimization of physical aspects of diagnostic and therapeutic procedures
- Commissioning and supervising the delivery of complex or new clinical procedures
- Technical specification of equipment and design of installations
- Acceptance and commissioning of equipment
- Technical supervision of maintenance
- Research and teaching

The exact role and responsibilities of medical physicists may vary among countries, depending on socio-economic background, training, service models, and national health and regulatory policies. Furthermore, the tasks of medical physicists evolve with time as new medical technologies and methodologies are introduced into the clinic. For this reason, the list should be subject to regular review and update.

#### 4 Education and Training of Medical Physicists

Medical physicists should have received appropriate education in physics or engineering science and professional competency training in one or more sub-fields of medical physics. To maintain and enhance their professional competence, practicing medical physicists should each undergo a continuous professional development program. The recommended basic requirements for education, training and continuous professional development of MPs are given in IOMP Policy Statement No. 2.

#### 5 Professional Certification of Medical Physicists

To help strengthen the training and professional development of MPs and to promote professional competency and high standard of practice, IOMP recommends that an appropriate means for professional certification of medical physicists be established by national member organizations, either by implementing their own national certification schemes or in collaboration with other established national or international certification bodies.

## Appendix

### Roles and Responsibilities of Medical Physicists Working as Health Professionals

The key roles and responsibilities of medical physicists include the following:

#### Safety:

- 1 Establishing and implementing programs to ensure the quality, safety, correct maintenance, and effective use of therapeutic and diagnostic medical equipment<sup>3</sup>.
- 2 Supervising the management and custody of radiation sources.
- 3 Formulating radiation protection guides and procedures specific to hospital environment and other professional groups and organizations; conducting specialized measurements and producing protocols to optimize radiation exposure of patients, and minimize radiation dose to staff and the general public.
- 4 Performing risk assessment, radiation protection design, shielding calculation on radiological installations.
- 5 Participating in and contributing to the development and implementation of national and international standards, laws and regulations relating to patient safety, particularly to radiation and radioactive materials.
- 6 Supervising and managing radiation workers and other health professional workers as relevant.

#### Clinical:

- 7 Calibrating radiation sources, external and internal, and measuring radiation in therapeutic and diagnostic radiological procedures to ensure the correct and accurate delivery of radiation dose to a patient.
- 8 Optimizing the physical aspects of diagnostic and therapeutic procedures.
- 9 Implementing, advising, and supervising the delivery of new clinical procedures.
- 10 Developing, implementing, and supervising a quality assurance program for equipment and procedures involving the delivery of ionizing and non-ionizing radiation in diagnostic and therapeutic procedures.
- 11 Participating at patient discussion conferences and advising healthcare personnel with regard to issues involving delivery of radiation dose.
- 12 Performing or supervising the performance of others in radiation treatment planning and dose calculation, and design and fabrication of treatment aids and treatment-beam modifiers for individual patient treatments.
- 13 Advising and consulting with physicians on the physical and

radiobiological aspects of patient treatments.

- 14 Advising and consulting with physicians on the development of safe and effective techniques and procedures in the application of ionizing and non-ionizing radiation in diagnosis and therapy of human diseases.
- 15 Performing or supervising others to perform acquisition, analysis and interpretation of clinical image and/or data for the purpose of studying/diagnosis/treatment of human disorders and illnesses.
- 16 Providing consultation and support on medical informatics and computer network management.

#### Management and Planning:

- 17 Conducting or providing consultation/support on the conduct of specialised examinations of patients, improving patient care and clinical services, developing innovative imaging and other diagnostic procedures for specific medical applications.
- 18 Planning, directing, conducting, and participating in supporting programs and remedial procedures to ensure effective and safe use of ionizing and non-ionizing radiation in patients.
- 19 Performing or providing consultation on planning, development and implementation of new clinical services and facilities.
- 20 Providing consultation on strategic planning of medical equipment technology; preparing specification for equipment acquisition; performing or supervising testing, commissioning, and management of medical equipment.

#### Research and Development:

- 21 Conducting research and development of new technology, methodology and procedure in radiation therapy, diagnostic radiology, nuclear medicine and other clinical services.
- 22 Conducting research into human disorders, illnesses and disabilities; investigating biophysical techniques associated with any branch of medicine.
- 23 Supporting the physical aspects of clinical trials and research involving the delivery of ionizing and non-ionizing radiation to patients for diagnostic and therapeutic purposes.
- 24 Developing novel instrumentation and physiological measurement techniques, mathematical analysis and applications of computers in medicine in response to clinical need for patients.
- 25 Preparing, publishing and presenting scientific papers and reports.

#### Teaching:

- 26 Teaching the principles of medical physics and radiation safety to physicians, residents, graduate students, medical students, technologists, and other health care professionals.
- 27 Mentoring trainees and junior staff in medical physics.

<sup>1</sup> Depending on the professional environment there may also be close links to neighbouring sciences as Biophysics, Biological Physics, Health Physics, etc.

<sup>2</sup> Different terminologies are used in member organizations, e.g. Qualified Medical Physicist, Qualified Expert in Medical Physics, or Medical Physics Expert.

<sup>3</sup> "Equipment" in this context is taken to include hardware and associated software, when applicable. ◀

# IOMP Policy Statement No. 2

## Basic Requirements for Education and Training of Medical Physicists

### 1 Introduction

This policy statement provides general guidelines for member organizations in defining the basic requirements for education and training of medical physicists. It aims to serve as a reference for medical physics organizations, education institutions and health care providers and authorities in planning and development of their national infrastructures for education, training and certification of medical physicists and for maintenance of standards of practice. This policy document should be read in conjunction with IOMP Policy Statement No. 1 (The Medical Physicist: Role and Responsibilities) [1].

### 2 Education and Training of Medical Physicists

Medical physicists (MPs) working as health professionals shall demonstrate competency in their discipline by obtaining the appropriate educational qualification and clinical competency training in one or more sub-fields of medical physics. Basic knowledge of the other sub-fields is also required. MPs practicing in hospitals/clinical environments shall also participate in a continual professional development program. Recommendations on the minimum levels of education and professional training for MPs are given in the following sections.

#### 3 Education Requirement

3.1 The minimum educational qualification for an MP is a university degree or equivalent (level corresponding to a master's degree) majoring in medical physics or an appropriate science subject.

3.2 Educational qualification could be accomplished in two phases. The first phase of the education program is completion of a bachelor's degree in physics or an equivalent degree in a relevant physical or engineering science subject. The second phase of the program is completion of a postgraduate program at a master's degree level in medical physics or an equivalent degree in an appropriate physical science subject.

3.3 The suitability of a certain education program to provide the necessary academic knowledge for the following professional training could be established through a suitable national or international validation/accreditation body.

#### 4 Professional Training Requirement

Medical physicists who have clinical responsibilities should have received (additionally to their education) a clinical competency training, preferably in the form of a formal residency or an equivalent clinical training program, for a duration appropriate to their roles and responsi-

bilities. For those jurisdictions in which an accreditation program exists for residencies, the residency should be an accredited program.

4.1 Minimum duration of training - The duration of clinical competency training should not be less than 2 years full-time equivalent. The training should be carried out under the direct supervision of a Certified Medical Physicist (CMP) specialized in the same sub-field or a qualified professional with a level of professional experience and expertise equivalent to that of the CMP.

4.2 Training for additional sub-fields - Not less than 1 year full-time equivalent clinical competency training is recommended for each additional sub-field.

4.3 The clinical training program for each sub-specialty should be well-structured and designed to provide the trainee with extensive hands-on experience on a comprehensive range of clinical physics work processes and services. While suitable clinical training programs exist in some countries, at international level the IAEA training programs for medical imaging physics [5], radiation oncology physics [6] and nuclear medicine physics [7] are for example, appropriate syllabi for such structured clinical training.

#### 5 Professional Certification

Medical physicists practicing in medical institutions or those with clinical responsibilities should be subject to professional certification.

5.1 Certified Medical Physicist (CMP) - An MP who has fulfilled the education and training requirements as stated in Sections 3 and 4 above should, where possible, sit for a formal professional certification assessment. Upon passing the formal professional certification assessment the MP would become a CMP.

5.2 Medical physics organizations or health competent authorities should establish their own national professional certification systems to facilitate such process. In countries where the establishment of such a national certification system is impractical, considerations should be made to have their MPs certified by an appropriate external certification body. To ensure that an appropriate level of professional standard can be achieved and maintained, national certification systems should be subject to appropriate quality audits. This could be achieved through an independent accreditation process conducted by a well-established national or international certification or accreditation body.



5.3 A professional competency maintenance scheme should be implemented for CMPs who have clinical responsibilities. This could be in the form of re-certification after an appropriate period of time and/or participation in a mandatory CPD program as described in paragraph 6 below.

**6 Continual Professional Development (CPD)**

Each MP and CMP should enter a CPD program. Medical physics organizations should establish and maintain their own national CPD systems to support the continual professional development of their members. In countries in which establishment of such a CPD system is impractical, arrangements should be made for the medical physicists to enter a well-established external CPD system. Detailed recommendations on CPD are given in a separate IOMP policy document.

**7 Implementation**

This document gives recommendations on the minimum requirements for education and clinical training of medical physicists. IOMP member organizations have the responsibility to establish the appropriate infrastructures in their own countries to achieve and maintain such quality standard in the education and training of their medical physicists.

**References**

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**20-24 August 2012**

Radiological Emergency Planning: Terrorism, Security, and Communication; Boston, MA USA

**20-24 August 2012**

Medical Radiation Safety Training; Oak Ridge, TN US [www.oraui.org/ptp/ptp.htm](http://www.oraui.org/ptp/ptp.htm)

**23-25 August 2012**

Int'l Workshop on New Technologies in Radiotherapy; Bangkok, Thailand [www.cccthai.org/en\\_](http://www.cccthai.org/en_)

**2-7 September 2012**

12th Int'l Conference on Radiation Shielding & 17th Topical Meeting of the Radiation Protection and Shielding; Nara, Japan [www.icrs12.org](http://www.icrs12.org)

**5-8 September 2012**

World Molecular Imaging Congress; Dublin, Ireland [www.wmicmeeting.org](http://www.wmicmeeting.org)

**6-9 September 2012**

3rd Romanian Conference on Medical Physics Sibiu, Romania [www.ecmp2012.ro](http://www.ecmp2012.ro)

**10-12 September 2012**

IPEM Medical Physics and Engineering Conference; Oxford, UK [www.ipem.ac.uk](http://www.ipem.ac.uk)

**10 Sep - 12 Oct 2012**

Applied Health Physics; Oak Ridge, TN USA [www.oraui.org/ptp/ptp.htm](http://www.oraui.org/ptp/ptp.htm)

**14-16 September 2012**

Computed Tomography Hands-On Workshop for Physicists Houston, TX

**17-19 September 2012**

Mathematics of Medical Devices and Surgical Procedures; London, U.K. Institute of Mathematics

**23-27 September 2012**

Principles and Practices of Radiation Safety: Occupational and Environmental Radiation Protection; Boston, MA USA

**26-29 September 2012**

Annual Meeting of the German Society of Medical Physics (DGMP) ; Jena, Germany [www.dgmp-kongress.de](http://www.dgmp-kongress.de)

**4-6 October 2012**

Int'l Cancer Imaging Society 12th Annual Teaching Course ; Oxford, UK [www.icimagingociety.org.uk/meetings](http://www.icimagingociety.org.uk/meetings)

**1-5 October 2012**

Int'l Conference on Medical Image Computing and Computer Assisted Intervention; Nice, France  
MICCAI 2012 [www.miccai2012.org](http://www.miccai2012.org)

**5 October 2012**

Image-Guidance and Multimodal Dose Planning in Radiation Therapy Workshop [www.medical.rob.uni-luebeck.de/miccai2012rt](http://www.medical.rob.uni-luebeck.de/miccai2012rt)

**18-20 October 2012**

6th Conference of EFOMP and the 11th National Conference of the Bulgarian Society of Biomedical Physics and Engineering (BSBPE), Sofia, Bulgaria [www.empec2012.bsbpe.org](http://www.empec2012.bsbpe.org)

**7-31 October 2012**

4th Int'l Symposium on Radionuclide Targeted Radiotherapy and Dosimetry; Annual Congress of the European Association of Nuclear Medicine, Italy

**28-31 October 2012**

ASTRO Annual Meeting; Boston, MA USA [www.astro.org/annualmeeting](http://www.astro.org/annualmeeting)

**29 Oct - 3 Nov 2012**

IEEE Nuclear Science Symposium, Medical Imaging Conference and Workshop on Room-Temperature Semiconductor X-Ray and Gamma-Ray Detectors; Anaheim, CA USA [www.nss-mic.org/2012](http://www.nss-mic.org/2012)

**4-8 November 2012**

7th Int'l Conference on 3D Radiation Dosimetry ; Sydney, Australia [www.ic3ddose.org](http://www.ic3ddose.org)

**16-17 November 2012**

Respiratory Motion Management for Radiation Therapy; St Louis, MO USA <http://radonc.wustl.edu/pdf/MMRTCcourse.pdf>

**25-30 November 2012**

RSNA Annual Meeting; Chicago USA Radiological Society of North America [www.rsna.org](http://www.rsna.org)

**28 November 2012**

Seminar on Quality Control for Linear Accelerator and TPS, Dhaka, Bangladesh

**30 Nov - 1 Dec 2012**

Practical Aspects of Stereotactic Body Radiation Therapy-SBRT,Stanford,CA,US

**2-6 December 2012**

Engineering & Physical Sciences in Medicine Conference (EPSM2012); Gold Coast, Queensland, Australia [www.epsmconference.org/](http://www.epsmconference.org/)

**3 - 7 December 2012**

IAEA Int'l Conference on Radiation Protection in Medicine Bonn, Germany

**11-14 December 2012**

The 9th SEACOMP and 12th AOCMP , Chiang Mai , Thailand

**13- 16 December 2012**

Regional Workshop on the implementation of the International Code of Practice for external radiotherapy dosimetry, IAEA TRS-398, Doha, Qatar

**27-30 January 2013**

HPS Mid-Year Topical Meeting on Medical Health Physics and Accelerator Dosimetry ; Scottsdale, AZ USA [www.hps.org/meetings/meeting33.html](http://www.hps.org/meetings/meeting33.html)

**19-21 February 2013**

1st International Iranian Conference on Advanced MR Neuroimaging Techniques and procedure, at.

**7-11 March 2013**

European Congress of Radiology (ECR), Vienna, Austria, [www.myESR.org](http://www.myESR.org)

**15-16 March 2013**

2nd Annual Conference of Bangladesh Medical Physics Society (BMPS), Dhaka, Bangladesh.

**6-9 May 2013**

17th Int'l Conference on the Use of Computers in Radiation Therapy (ICCR); Melbourne, Australia [www.iccr2013.org](http://www.iccr2013.org);

**4-8 August 2013**

AAPM 55th Annual Meeting; Indianapolis, IN USA [www.aapm.org/meetings](http://www.aapm.org/meetings);

**22-25 September 2013**

ASTRO 2013; Atlanta, GA USA

**1-6 December 2013**

RSNA 2013;Chicago US,[www.rsna.org](http://www.rsna.org)

**13-15 March 2014**

2nd International Conference on Medical Physics in Radiation Oncology and Imaging and 3rd Annual Conference of BMPS, Dhaka Bangladesh. ◀