



International Commission on Medical Physics Committee, IComMP International Union of Pure and Applied Physics (IUPAP) Affiliated Commission AC4: Medical Physics

Fridtjof Nüsslin, Chair

Report on Activities from September 2015 till September 2017

Background

The International Organization for Medical Physics (IOMP) represents over 25,000 medical physicists worldwide and has 86 national member organizations. The mission of IOMP is 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.

Medical Physics is a branch of Applied Physics that applies scientific principles, methods and techniques in practice and research for the prevention, diagnosis and treatment of human diseases with the specific goal of improving human health and well-being. The profession Medical Physicist has been recognized by the International Labor Organization (ILO) in 2010 as a professional group listed in the ILO classification system ISCO-08 under '*Physicists and Astronomers*'. To strengthen Medical Physics science within IOMP and to link IOMP to IUPAP the International Commission on Medical Physics (IComMP) has been established which has been approved as IUPAP Affiliated Commission AC4.

Objectives of AC4:

- (1) to promote medical physics in its scientific and professional aspects in the physics community by interaction with the IUPAP commissions,
- (2) to specifically link to the C6 commission "Biological Physics",
- (3) to apply for support of the ICMP congress series,
- (4) to participate in the IUPAP Young Scientist Award program

Mission of AC 4:

The mission of IOMP is to 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.

Members for the term 2015-2017:

Slavik Tabakov (IOMP President)
Madan Rehani (IOMP Vice President)
Kin Yin Cheung (IOMP Immediate Past President)
Virginia Tsapakh (IOMP Secretary General)
Anchali Krisanachinda (IOMP Treasurer)
Geoffrey Ibbott (IOMP Chair Science Com)
John Damilakis (IOMP Chair Education & Training Com)
Yakov Pipman (IOMP Chair Professional Relations Com)
Tae Suk Suh (IOMP Chair Publication Com)
Simone Kodlulovich Renha. (IOMP Chair Awards & Honors Com)
Magdalena Stoeva (IOMP Medical Physics Board Chair)
Fridtjof Nüsslin (Chair IUPAP AC4, Past President IOMP)

Aihua Xie (Chair IUPAP C6 Biological Physics)
Sandro Scandolo (Chair IUPAP C13 Physics for Development)
Hideo Nitta (Chair IUPAP C14 Physics Education)
Ana Maria Marques da Silva (Porto Alegre, Brazil)
Eric KT Addison (Kumasi, Ghana).

Short Report

1. International Day of Medical Physics (IDMP):

In 2013 the IOMP declared the 7th November, the birthday of Nobel laureate Marie Sklodowska Curie famous for her pioneering work in radiation physics and chemistry, as the annual International Day of Medical Physics (IDMP). All regional and national organizations worldwide are invited to participate by organizing activities such as scientific and public lectures, special history events and press appearances. The IDMP 2015 was organized under the theme “Better Medical Physics – Better Cancer Care in Radiation Oncology”. The IDMP 2016 was focussing at “Education in Medical Physics: The Key to Success” emphasizing the crucial importance of education and training in Medical Physics for an effective and safe use of ionizing and non-ionizing radiation in health care. This year (2017) the International Day of Medical Physics (IDMP), marks the 150th birthday of Maria Sklodowska Curie. Due to this reason IOMP decided to dedicate the IDMP to women. The theme of IDMP 2017 is “Providing a Holistic Approach to Women Patients and Women Staff Safety in Radiation Medicine”. IOMP announces all festivities related to IDMP at its specially made web site:// [http www.iomp.org/idmp/](http://www.iomp.org/idmp/)

2. Education and Training of Medical Physicists:

The Global Task Force on Radiotherapy for Cancer Control (GTFRCC), created by the Union for International Cancer Control (UICC), published last year an essential report showing that addressing the global shortfall in radiotherapy could save millions of lives and, at the same time, boost the economy of poorer countries. The report projects that investing in radiotherapy services could bring up to \$365 billion of economic benefits to low and middle income countries (LMICs) alone over the next 20 years. The detailed calculations in the GTFRCC report quantified the needs in equipment and personnel for 2015-2035. To address just the needs of cancer care in LMICs by 2035, along with 13,000 more teletherapy units, there is a need for 22,000 more Medical Physicists. This means that more than 1,000, newly trained Medical Physicists, are needed each year, for twenty years, in LMICs alone (see References 1, 2). On this background, The IOMP initiated over the recent years a series of activities with special focus on the unsatisfactory situation in developing countries like organizing training courses, building partnerships of institutions in industrial and developing countries, supporting the library program and sponsoring the attendance of conferences by scientists and students. IOMP was also partner in the large International projects EMITEL, which prepared a Dictionary of Medical Physics Terms (now translated into 29 languages), aiming to help the development of the profession in various countries (most of these low-and-middle-income countries). The e-Dictionary plus e-Encyclopaedia of Medical Physics are uploaded at www.emitel2.eu and currently have about 8,000 users per month.

References:

1. Expanding global access to radiotherapy - Rifat Atun et al,- The Lancet Oncology - Volume 16, No. 10, p1153–1186, September 2015
2. Global Task Force on Radiotherapy for Cancer Control - David Jaffray et al. - The Lancet Oncology - Volume 16, No. 10, p1144–1146, September 2015
3. Tabakov, S. (2016), Global Number of Medical Physicists and its Growth 1965-2015, Journal Medical Physics International, v.4, p 78-81

3. **IOMP Women Subcommittee** was established to increase female participation in Medical Physics science, education and practising in a clinical environment. We are facing a general understaffing of Medical Physicists at hospitals and universities, particularly in developing countries, and intend to take proper actions to increase recruitment of females to qualify for that most interesting profession. In this framework, IOMP decided to dedicate to women the 150th birthday of Marie Curie which will be celebrated at the 7th November 2017 as the annual International Day of Medical Physics. The IOMP-Women Subcommittee organized

two women symposia at the International Conference of Medical Physics held in Bangkok 9-12 December 2016: “Women in medical physics: education and profession” and “Participation of women in medical physics scientific events”. The workshops were well-attended. During the workshops a number of actions have been initiated for the year 2017. Further activities are planned for the Asia-Oceania Congress in Medical Physics during November 2017 in Jaipur India. A special issue on Women Medical Physicists that inspire all women around the world was published on 8th March 2017 (International Women's Day).

References:

Medical Physics World, March 2017: <http://www.iomp.org/sites/default/files/empw-2017-00.pdf>

4. International Conference on Medical Physics (ICMP), Bangkok, 9-12 December 2016, “Medical Physics Propelling Global Health”:

This major triannual gathering of the medical physics community attracted more than 800 medical physicists, most of these from Asia. Beyond the wide scale of topics of medical physics science 2 events should be mentioned here. The IOMP Subcommittee organized a session on **Women in Medical Physics**, their role and specific problems. The other event which particularly benefits from the IUPAP Congress Sponsoring Program was the workshop on **Building Professional Capacities in Developing Countries**. Against the current trend of a significant increase of medical physicists in the developed countries the status in LMI-countries is far behind, particularly in Central and South America and in Africa.

As an example, currently the African continent with population of 1.1 billion (15.5 % of the people on the planet) has about 400 medical physicists (less than 2% of the global number of medical physicists). These geographical areas need the attention of all in our profession and requires proper measures to build up capacities in science, education and clinical service.

This year for the first time the John Mallard Award was presented at the 22nd ICMP in Bangkok, Thailand. The winner was Prof. Paul Marsden, one of the pioneers of the PET-MR imaging system. Also this year at the ICMP 2016 IOMP presented for the first time its new Awards for the International Day of Medical Physics. This new IDMP Awards are to acknowledge the promotion of medical physics to a larger audience and the highlighting the contributions medical physicists make for patient care.

References:

Medical Physics World, March 2017, p. 15: <http://www.iomp.org/sites/default/files/empw-2016-02.pdf>

5. Master’s of Advanced Studies in Medical Physics:

In collaboration with the ICTP Trieste the ICTP-International Medical Physics College established a Master’s of Advanced Studies in Medical Physics program. Thanks to the support and direct sponsoring of the IAEA the number of students, all coming from LMICs, has been increased now to 30. In order to help this international education IOMP established an Accreditation Panel and during 2016 complete the accreditation of the MSc in Medical Physics at ICTP, Trieste, Italy

6. IUPAP Young Scientist Medal 2016:

In 2016, the IOMP Awards & Honors Committee received many nominations for the IUPAP Young Scientist Award. The winner was Dr. Francis Hasford, a Senior Research Scientist at the Radiological and Medical Sciences Research Institute of Ghana Atomic Energy Commission, simultaneously serving as Lecturer and Head of the Medical Physics Department of the School of Nuclear and Allied Sciences, University of Ghana. His PhD thesis was entitled “Ultrasound and PET-CT Image Fusion for Prostate

Brachytherapy Image Guidance“. Outcome of his study has been presented at national and international conferences and was selected as best poster presentation at the Maiden University of Ghana Doctoral Conference.

The IUPAP Young Scientist Medal 2016 was presented to Dr.Hasford during his participation at the IAEA project for development of Training in Africa (just before the ICMP 2016 in Bangkok). Currently IOMP prepares for the selection of the 2017 IUPAP Young Scientist awardee. The winner will be announced at 5th November 2017.

More details about the activities of IOMP can be found in the recent issues of Medical Physics World (eMPW) and Medical Physics International (MPI), available from: www.iomp.org

Next meeting: to be announced.

Munich, 1st September 2017

Fridtjof Nüsslin
Chair IUPAP Affiliated Commission Medical Physics, AC-4
Past-President IOMP

Slavik Tabakov,
President IOMP