International Organization for Medical Physics



eMPW

Volume 35 Number 3 December, 2019



# Medical Physics World

# Medical Physics World

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## **IOMP NMOs**

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United Arab Emirates Italy United Kingdom Japan Jordan United States Kuwait Vietnam Lebanon Zambia

Bangladesh - AFFILIATE Malaysia

Zimbabwe

Mongolia

Indonesia

### **Editorial**

# Magdalena Stoeva, PhD Editor IOMP Medical Physics World



Dear Colleagues and Friends,

2019 has been a great year – quite intensive for medical physicists worldwide in many aspects – professional, scientific, educational. Please read the December 2019 issue of MPW to get more details on all our activities. Medical Physics World presents the reports of the IOMP ExCom – the IOMP President's

message on key activities in 2019 and future plans; the IOMP new Secretary General's report; Committee chairs; reports from the IOMP Treasurer and IDMP coordinator as well as reports from Regional Organizations and NMOs. IOMP President Elect and IOMP Past President present their papers on scientific and professional topic related to medical physics.

IOMP started many new activities in 2019 (newsletter, IMPW) and continued providing valuable contribution on existing ones (IDMP, BSS, CPD). IOMP President's report highlights IOMP's main achievements in all these areas.

We all agree that ICMP 2019 has been the biggest event for our profession in 2019. Please read the IOMP Science Committee and Awards & Honors Committee reports for more details on ICMP and the

recognition of the work and contribution of our colleagues worldwide.

IOMP's internet presence in 2019 was remarkable thanks to the launch of the new IOMP website and internet campaigns. In 2019 Medical Physics World turned 35 years. In appreciation MPW's of continuous contribution to Medical Physics during all these years, IDMP 2019 was dedicated to Medical Physics World. MPW in its turn published а special dedicated to the 35<sup>th</sup> anniversary which turned out to be the biggest MPW issue so far. As an Editor of the MPW, please allow me to thank the IOMP, the medical physics societies and all the medical physicists worldwide for their support throughout all vears and for recognition we received during our anniversary year!

Medical Physics World
MPW/eMPW
ISSN 2313-4712
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## **President's Report**

# Madan M. Rehani, PhD President of IOMP



Dear Colleagues,

Greetings from this medium of Electronic Medical Physics (eMPW) which has just completed 35 years, earlier as a physical printed bulletin till 2009.

By this time, you are all familiar with the International Day of Medical Physics (IDMP) that IOMP established since 2013. The theme of IDMP 2020 has been decided and it is Medical **Physicist** Health Professional. Many countries are still facing the problem of their Ministry of Health not recognizing medical physicist as health professional. This

despite the fact that International Basic Safety Standard (commonly known as BSS) defines medical physicist as a health professional. The BSS is steered and released by the International Atomic Energy Agency (IAEA) and is jointly sponsored by the World Health Organization (WHO), International Labour Organization (ILO), European Commission (EC), FAO (Food and Agriculture Organization), Pan American Health Organization (PAHO), United **Nations** Environment Program (UNEP), Economic Organization for Cooperation and Development (OECD) and Nuclear Energy Agency (NEA). IDMP2020 shall provide opportunity strengthen and recognition of the role of medical physicist as a health professional.

IOMP also decided to organize International Medical Physics Week (IMPW) and the very first IMPW shall be celebrated on 11-15 May 2020. All countries are encouraged to celebrate IMPW. The webpage of IMPW provides some guidance on IMPW but

countries and organizations are urged to use creative means to celebrate.

The Newsletter of IOMP provides more frequent information as time there is information that needs to be propagated. Also, the IOMP website is now being updated at least 5 times more than some years ago. Every month there are updates and readers are encouraged to keep a watch on home page of IOMP under News and Events.

The IOMP sponsors and endorses many training events in many countries with a focus on support to developing countries. If you wish to organize event please visit for norms. IOMP accredits graduate programs and provides CPD for training courses. Please visit relevant page for further information.

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## **International Medical Physics Week (IMPW)**

International Organization for Medical Physics Fairmount House, 230 Tadcaster Road, York, UK

#### **BACKGROUND**

The concept of International weeks has been around and accepted by United Nations www.un.org/en/sections/observances/international-weeks

There are 10 weeks listed on UN website. Further there are 7 international weeks by UNESCO: en.unesco.org/commemorations/international-weeks

While these are based on UN observance, professional societies are free to initiate weeks and seek UN approval, if so needed. Thus, it is similar to International Day. We started International Day of Medical Physics (IDMP) and have yet to approach UN for recognition.

IOMP decides to launch International Medical Physics Week (IMPW) somewhat similar to International Day of Medical Physics (IDMP). The purpose is to motivate organization of activities in a defined week that result in the promotion of the subject of medical physics globally, in particular by arranging meetings with official bodies. For more information see www.iomp.org/impw

#### WHEN?

Mid-month week in May each year. For 2020 (11-15 May)

#### **HOW AND WHO?**

Organization of activities all over the world by medical physicists as:

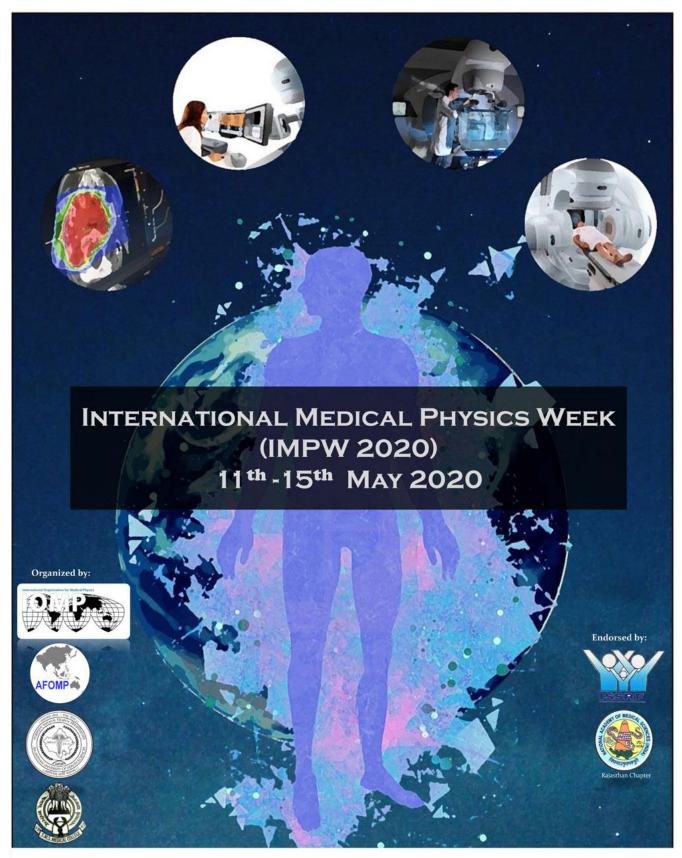
- Educational sessions (face-to-face or virtual)
- Campaigns
- Meetings with decision making bodies, professionals of clinical specialties
- Chats and social media

#### **PROMOTION**

International Medical Physics Week webpage on IOMP website www.iomp.org/impw

#### RECORD OF ACTIVITIES AND FEEDBACK

IOMP-MPW webpage www.iomp.org/impw-activities



Address for Correspondence:

Department of Radiological Physics, SMS Medical College & Hospital, Jaipur, Rajasthan, India-302004

Email: conferencesmsmc@gmail.com

# Some thoughts on radiation-induced cancer risks associated with radiological imaging

Prof. John Damilakis, IOMP Vice President and President-elect



It has been well documented that high doses of radiation may cause cancer. However, a firm link between low radiation doses, such as those received by patients during diagnostic and interventional procedures, and cancer has not been established yet. Even so, radiation protection regulations conservatively assume that any amount of radiation may pose some risk for carcinogenesis.

Theoretically, cancer risks associated with diagnostic and fluoroscopically-guided procedures can be determined from epidemiological derived by irradiated patients. However, this approach requires a very long patient follow-up due to the long latency for cancer development. Moreover, a very large number of patients is needed to detect a significant increase in cancer mortality. In many studies, the radiationinduced lifetime risk of cancer incidence is determined multiplying radiation dose with risk factors published by the International Commission Protection (ICRP Radiological Publication 103, 2007) or the Biological Effects of Ionizing Radiation Committee (Committee to Assess Health Risks from Exposure to Low levels of Ionizing Radiation, Nuclear and Radiation Studies Beard, Division on Earth and Life Studies, National Research Council of the National Academies. Health risks from exposure to low levels of ionizing radiation: BEIR VII). For example, to derive lifetime risks of sitespecific cancer incidence associated with a radiation exposure from a CT examination, organ doses are multiplied by appropriate sex- and age-specific risk factors provided by BEIR. The total life time attributable risk can be estimated by summing up site-specific lifetime attributable risks. However, risk estimation using coefficients is not a precise science and is associated with large uncertainties.

The accuracy of radiationinduced risk estimation should be improved taking into consideration personalised estimation of patient doses, radiobiological parameters such as individual radiation sensitivity radiation quality. uncertainties in radiation risk estimates is another issue that needs attention. Risk coefficients for radiogenic cancer are based on the linear-no-threshold model which assumes that cancer risk is directly proportional to the dose. example, recommendations on 'Pregnancy and radiation' (ICRP Publication 84, 2000) indicate an excess cancer risk for fatal childhood cancer due to irradiation in utero to be 6% per Gy. This means that if the dose to an embryo from a CT examination is 20 mGy, the risk of excess childhood fatal cancer is 0.12%. However, the validity linear-noοf the threshold model for low radiation doses has not been yet. confirmed Current knowledge of the biological effects of ionizing radiation comes mainly from the survivors of the atomic bombs. Obviously, there are uncertainties in the transfer of risk data from Japanese population exposed in 1945 to another population exposed in 2019. Research on uncertainty of dose estimates, risk coefficients and relevant models is needed to provide new insights into risk evaluation, risk communication and risk management.

## From the desk of the IOMP Secretary General

#### Prof. Eva Bezak Secretary General of IOMP



Dear Colleagues,

It has been an honour to assume the role of the IOMP Secretary General in August 2019, having some big shoes to fill, following Virginia Tsapaki's departure, as she assumed a new exciting role at IAEA.

With ICMP 2019 just behind the corner, I had to hit the ground running, but Virginia, Madan and other members of the IOMP ExCom have been very helpful and supportive to make the transition as smooth as possible.

ICMP2019 was an excellent meeting, and while you can read more details about the meeting in other reports, I would like to highlight the meetings that IOMP had with number organizations (including PAHO, IAEA, IRPA, ISR, AAPM, IPEM) and our regional member representatives to discuss the status of current collaborations as well as future projects, for example aiming to assist medical physicists worldwide to improve access medical physics education. In this aspect, IOMP jointly with IAEA will prepare a 1page letter for Basic Safety Standard (BSS) definition of the Medical Physicist as a health professional. In view of the congress being held in South America, we had more opportunities to discuss issues facing medical physicists in this region, including the need for higher education courses in medical physics in Latin America. IOMP will aim to provide assistance in regard to this issue.

In November 2019, the 5th International Symposium on the System of Radiological Protection, was held in Adelaide, South Australia (https://icrp2019.com/), where I was representing IOMP. The meeting was attended by more than 400 delegates from 37 countries discussing current research, data and challenges in the area of radiation protection not only in health but also in mining, energy and space travel and research. The meeting hosted a number of high-profile speakers in the area of radiation protection in medicine, including Profs Madan Rehani, John



ICRP 2019 Delegates, 20 November, 2019, Adelaide, South Australia.

Damilakis and Cynthia McCullough, who despite their busy schedules also delivered lectures to health professionals and students in South Australia.

One of the joyous occasions for me, as the SG-IOMP, were the celebrations of the International Medical Physics Day around the world. All day we were receiving messages, photos, web links, newsletters and other information proudly showing activities on all continents. We promptly uploaded all these on the IOMP website for everyone

to see and share the celebrations together. It was truly a festive day, being connected with medical physics colleagues and being proud of how far our profession has progressed over the years. The theme for next year is: Medical Physicist as a Health Professional – so put your thinking hats on now to see how we can advance and make our profession visible even more.

Lastly, past AFOMP, IOMP and IUPESM president, Prof Barry Allen, DSc AO, passed away on 20/11/2019 succumbing to

cancer, i.e. to a disease that he was trying to develop novel therapeutic approaches for in his radiation research, being a front runner in the area of targeted alpha therapy. I have been fortunate enough to know and work with Barry (even publishing a book together) for many years and he has been my mentor as well as my supporter. Barry will be fondly remembered as a bold pioneer in radiation and medical radiation research, contributing immensely to medical physics as well as patients world-wide.







## 18<sup>th</sup> Asian Oceanian Congress of Radiology

Malaysian Congress of Radiology 2020

Theme: From Pixel To Clarity

**a** 23 - 26 July 2020 **(2)** 





aocr2020.com

Contact us at secretariat@aocr2020.com

# IUPESM – increased collaboration between medical physicists and engineers

Slavik Tabakov
IUPESM Vice-President and IOMP Past-President



main activity of the International Union for Physical Engineering Sciences in Medicine (IUPESM) is increasing collaboration the between medical physicists and engineers. Specific steps were taken towards this activity from the beginning of new IUPESM term of office in 2018.

During 2019 this collaboration was realised through two very successful specific Workshops, organised by Prof. K P Lin and Prof. M Stoeva. The first Workshop took place in

Taiwan/Taipei (April 2019). This Workshop focussed on joint educational activities and modules.

The second Workshop took place in Italy/Rome (October 2019) further increased and the interest in this collaboration. The Rome Workshop was targeting activities related to maintenance and management of medical equipment. These activities are very often part of the responsibilities of medical physicists in Low-and-Middle-Income (LMI) countries, where often small hospitals have very limited staff and some medical physicists perform part of the activities of clinical engineers and vice-versa.

Both Workshops were associated with meetings of members of the IUPESM Administrative Council. The most important outcomes included a decision to increase these collaborative activities between medical physicists and engineers. It was decided Prof. K

P Lin and Prof. M Stoeva to be in charge of future ioint Workshops. Additional decision was the approval of further specific steps towards the incorporation of IUPESM. The latter will use the experience of IOMP from 2016-2017. IUPESM AC also approved the introduction of a fellowship scheme of the Union. The stable progress of the IUPESM Journal Health and Technology accepted tracing the as development of the Journal in the coming years.

During 2019 our sister organisation – the International Federation of Medical and Biological Engineering (IFMBE) celebrated its 60th anniversary. IOMP takes this opportunity to congratulate our colleagues - medical and biological engineers - and to wish them every success in their support of healthcare.

#### **Contribution of IOMP to IDOS 2019**

#### Virginia Tsapaki Secretary General of IOMP (until 31 July 2019)



A very interesting conference for medical physicists and other scientists around the world took place on 18-21 June 2019 at the premises of the International Atomic Energy Agency (IAEA). It was organized by the IAEA in cooperation with numerous international organizations, scientific and professional societies, one of which was IOMP. The full list of invited organizations can be found here: https://www.iaea.org/sites/defa ult/files/19/04/cn-273organizations.pdf.

The major goal of the conference was to provide a forum at which recent advances in dosimetry, radiation medicine, radiation protection and associated standards would be presented. Distinguished speakers from across the world presented their

latest work and scientific research.

The conference consisted of 16 sessions that were evenly distributed during the 4 days. It included educational courses, focused sessions in specific scientific topics, oral and poster presentations by participants as well as a number of round-table discussion sessions (https://www.iaea.org/sites/defa ult/files/19/06/cn-273programme.pdf).

IOMP was represented by Virginia Tsapaki from Greece who gave a talk on "Dosimetry as a Tool in Optimization and Auditing and Manuel Bardies from France who gave the following talks: "Model-based versus patient specific; implications for nuclear medicine dosimetry", "Monte Carlo in Nuclear Medicine" and "OpenDose: An open database of reference data for nuclear medicine dosimetry".

The conference was also an excellent way to meet colleagues from around the world, socialize and discuss new ideas.

For those who were not present some of the sessions were also recorded and can be found here: http://streaming.iaea.org/21120



## **Treasurer Summary Report**

# Ibrahim Duhaini IOMP Treasurer



During the last six months, the following activities have been executed:

1. Reviewing and approving ExCom expense claims, invoices, bills and other incidentals. See below the IOMP - Summary of income and Expenses:

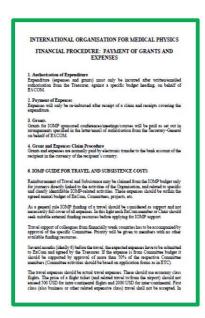
#### <u>Income</u> Membership \$8.877 Interest \$2,274 Events \$5,693 Accreditation Board \$8,350 **Expenses** \$19,920 Officers Travel Travel Awards \$3,814 Sponsorship \$1,000 \$5.914 Events Website/newsletter \$532 \$6,617 Administration Bank charges \$757

2. Sending Fees letter to all NMO. See bellow.



- 3. Updating the NMO membership categories according to the new categories as follows:
- "A" 100% Dues: Industrialized and other countries with PP > US\$ 12000;
- "B" 50% Dues: Developing countries with their PP < US\$ 6000 and > US\$ 12000 and;
- "C" 10% Dues: Developing countries with their PP < US\$ 6000.

4. Updating the Financial Procedure: Payment of Grants and Expenses'. (see attached)



- 5. Following up and processing the opening of the IOMP Company Account.
- 6. Performing other related duties with the ExCom members, IOMP Accountant and Administration Office.

## **IDMP 2019 Summary Report**

#### Ibrahim Duhaini IOMP Treasurer



After six years of celebrating the international Day of medical Physics, many countries, medical physics societies and related organizations are celebrating this special day which coincides with the birth date of Madam Curie on November 7 of every year.

This year theme was: It is a Medical Physics World in relation to the 35 Years of the birth of the Medical Physics World newsletter. The following has been posted on the newly designed IDMP website section:

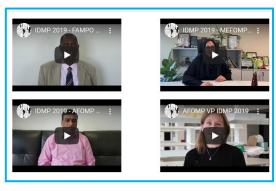
1. Videos from the IOMP president, some IOMP regional presidents, representatives of WHO and IAEA, and the yearly message from the IDMP Coordinator.





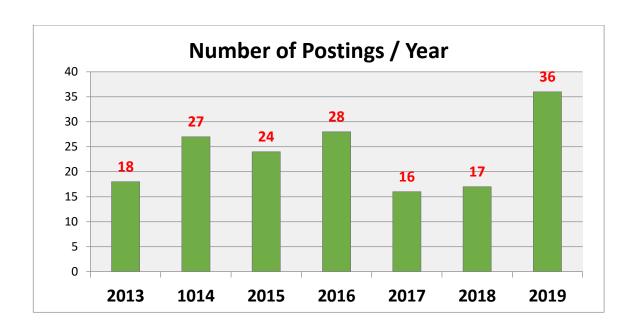




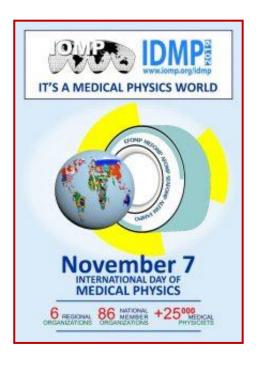


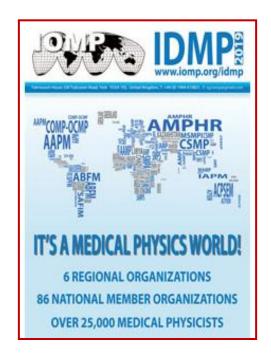
- 2. 36 event postings including 6 organizations and more than 22 countries are the latest numbers from IDMP 2019 celebrations as reported for the IOMP website:
- a. From Asia: Qatar, Japan, Iran, Bangladesh, and Lebanon.
- b. From Europe: UK, Serbia, Lithuania, Romania, Italy, Greece, Croatia, Bulgaria,
- c. From Americas: Canada, USA, Brazil,
- d. From Africa: Egypt

3. The number of posting this year increased compared to the number of posts during the previous years,



4. The posters of this year are the following:





## **Report of Science Committee**

## Geoffrey S. Ibbott Chair Science Committee



The IOMP Science Committee is responsible for disseminating current information to medical physicists; assisting in the planning and conduct of regional meetings on medical physics; contributing to and reviewing scientific documents prepared by organizations such as the ICRP, the WHO, and the IAEA; and participating in various forums for the generation of scientific information in medical physics.

The chair regretfully has accepted the resignation of Facundo Ballester of Spain/EFOMP and wishes to thank Dr. Ballester for his contributions over many years. For the remainder of 2019-2021, the Committee membership is shown below:

Geoffrey Ibbott , Chair, USA
Abdalla Al-Haj, Saudi Arabia/MEFOMP
Sha Chang, USA
Lawrence Dauer, USA
XiaoWu Deng, China
Benedick Fraass, USA
Reinhard Loose, Germany/EFOMP
Mahadevappa Mahesh, USA

Malcolm McEwen, Canada
Hossein Mozdarani, Iran/MEFOMP
Wilbroad E. Muhogora,
Tanzania/FAMPO
Hugo Palmans, United Kingdom
Mark Rivard, USA
Maria Elisa Rostelato, Brazil/ALFIM
Ferid Shannoun, Austria
Vellaiyan Subramani, India
Yoshiharu Yonekura, Japan

A major recent activity of the SC was to support of the program and scientific committees of the International Conference on (ICMP). Medical Physics The ICMP2019 was held in Santiago, Chile, 8-11 September 2019 and was a great success. As co-chair Maria-Ester Brandan of (with the Mexico City) of two committees I appreciate the amount of work required to recruit proffered speakers, review abstracts, and assemble a cohesive program that was valuable for the attendees and easy to navigate. ICMP2019 was attended by 493 registrants from 54 countries. Ultimately, 65% of the work submitted for proffered oral and poster presentations came from Latin America and the Caribbean. The countries most represented in the presentations were Chile, Brazil, Argentina and Peru. Thus, ICMP-2019 was truly international and simultaneously was an important forum for the development of medical physics in the Latin American region.

It is expected that members of the SC will contribute to the program

committee for the upcoming World Congress in Singapore in 2021.

Several members of the SC have contributed to preparation of a report by the Expert Group on Medical Exposures. This is a project of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). The final report is to be completed in the next few weeks.

The SC was invited to review and comment on a draft of a book being prepared by the WHO on Decommissioning of Medical Devices. Our comments were forwarded to the WHO in advance of the deadline.

Members of the SC recently commented the Hazard on Terminology and Classification Review, co-facilitated by the United Nations Office for Disaster Risk Reduction and the International Science Council. This document aims to develop a scientific list of hazard definitions encompassed by the Framework, using an all-hazards approach to help countries report progress on disaster risk reduction. Our comments on the draft were submitted well in advance of the deadline.

Finally, the SC reviewed and approved a request for IOMP endorsement from the organizers of the International Conference on Radiation in Medicine (ICRM2020).

## **Report of Awards & Honours Committee**

# Simone Kodlulovich Renha Chair Awards & Honours Committee



During ICMP 2019, IOMP Award winners were able to celebrate their important achievements with their medical physicist colleagues receive and the during awards the special ceremonies take took place during the congress. The IOMP recognized the merit contribution of these medical physicists and their efforts to improve the medical applications of ionization radiation in the

areas of diagnosis, radiotherapy and nuclear medicine.

Another important moment of the year, the International day of Medical physics, medical physics of different regions were recognized by their work.

In this opportunity, we would like to do a brief presentation of these remarkable medical physicists.

#### 1) John Mallard 2019

During the opening ceremony we counted on the presence of Dr. Thomas Rockwell Mackie who was awarded the important prize John Mallard Award 2019 for his important contribution for the medical Physics, especially with the development of the helical tomotherapy system that was the first dedicated IMRT and CT guided treatment system and is in use in more than 35 countries.



#### 2) IUPAP 2019

The winner is Mitsuhiro Nakamura, an associate professor at Kyoto University, Kyoto, Japan. His research included four-dimensional imaging and delivery in radiation therapy for moving tumors. During his doctoral course, he investigated physical and clinical aspects of four-dimensional computed-tomography. In addition, he developed a visual feedback system and clinically applied intensity-modulated radiotherapy in combination with breath holding at end-exhalation using the visual feedback system. Dr. Nakamura considers that his most meaningful contribution to date has been in the development and clinical application of the Vero system, a radiotherapy unit with an integrated real-time tumor tracking system developed by Mitsubishi Heavy Industries, Ltd., in collaboration with Kyoto University.



#### 3) FIOMP

This honour aims to recognise significant activities for the international development of medical physics. Fellowship are awarded to persons who have made outstanding contributions to IOMP and its regional organisations over a significant period of time.

The Committee received seven nominations and after evaluation all candidates were elected as new Fellows of IOMP. The new Fellows of IOMP are:



Antonny Siebert UC Davis, US



Ehsan Samei, Duke University, US



Peter Sharp University of Aberdeen, UK



Mahadevappa Mahesh Johns Hopkins University School of Medicine USA



Howell Round University of Waikato, Hamilton, New Zealand (now retired)



Djawarni Soejoko University of Indonesia



Marta W.Radwańska (in memorian)

Finally, I would like to thank you all for nominating outstanding medical physicists for the different IOMP awards. Undoubtedly, it's always hard work for the A&H committee to decide the winners among so many deserving ones.

For the next year, we expect again for your participation.

Merry Christmas and happy 2020!

## **MEFOMP Report**

#### **KUWIT**

KAMP organized a training course in cooperation with the IAEA. For the occasion of IDMP, a panel discussion was held on the 11th November 2019. The members of the panel consist of the 3 IAEA experts and KAMP president Dr Meshari Al-Nuaimi and vice president Dr Hanan Aldousari. The panel had a one and a half hour discussion on the following questions.

- What are the main duties and responsibilities of a Medical Physicist?
- What are the specific responsibilities of clinically qualified medical physicists in occupational radiation protection?
- What are the staffing requirements (minimum number of staff) for providing medical physics services in diagnostic and Nuclear Medicine departments?
- How to become a clinically qualified medical physicist?
- What are the minimum academic qualification requirements of Medical Physicists?
- What are the requirements for continuing professional and educational development for Medical Physicists?
- Do Medical Physicists require additional training to become Qualified Medical Physicist?
- What is the structure and organization of a medical physics service in a hospital?
- What is Medical Physicists academic or research roles in a non-clinical environment?

The experts gave their view and detailed descriptions of current practices in their respective countries and global trends on these panel questions. There was active participation from members of the training course. The recommendations to the government by the 3 IAEA experts are detailed below in the conclusions. The entire discussion was recorded and was to be shared with various government organisations and the Kuwait Association of Medical Physics. A summary of the recommendations for the government of Kuwait by the experts is as follows:



Middle East Federation of Organizations of Medical Physics

- To recognise medical physicists as independent paramedical professionals in hospitals essential for the provision of quality diagnostic and therapeutic patient care.
- To establish a clinical training residency program for Medical Physicists as per IAEA Training Course Series 47 for diagnostic radiology and Training Course Series 50 in Nuclear Medicine in the short term.
- To review the medical physics staffing needs in diagnostic imaging and radionuclide therapy in Kuwait as per IAEA Human Health Report No. 15.
- To commence a university based Master's degree program for medical physics education in the long term.









#### **KSA**

- 1. Activity Title (The 6th International Conference on Radiation Medicine)
- 2. Organizer (King Faisal Hospital and Research Centre (KFSH&RC), the International Atomic Energy Agency (IAEA) and Alfaisal University).
- 3. Date: 09 to 13 February, 2020.

Time: 08:00: 17:00

Place: Alfaisal University, Riyadh, Kingdom of Saudi

Arabia, from 09 to 13 February 2020.

4. Any other relevant information

The submitted abstracts are received in the following tracks;

- Diagnostic & Interventional Radiology
- Medical Physics
- Nuclear Medicine
- Radiation Oncology
- Radiation Protection & Safety
- Radiation Emergency Management

- Clinical Engineering
- Radiologic Technology
- Medical 3D Printing & Reality Visualization
- Change Management
- Artificial & Business Intelligence

Please find below some important dates English the conference with some additional information.

- Abstract submission deadline: 15 December 2019
- Early registration deadline (30% off): 09 January 2019
- CME expected: 30 CME
- Number of expected attendees: +3000
- Number of international speakers: +50 speakers
- Number of local speakers: +60 speakers
- Number of workshops: +40
- Number of continue education courses (CEC): +30

Please note that the visit/tourist visa to Saudi Arabia is now is more flexible than previous years; it can be applied electronically or upon arrival, and the participants can attend the conference as a part of their tourist plan to Saudi. For more information, please visit: https://visa.visitsaudi.com/

#### **QATAR**



Qatar Medical Physics Society (QaMPS) celebrated the IDMP 2019 on the 7th of November by holding a large sign baring the words "International Medical Physics Day" and the logo of QaMPS and MEFOMP at the entrance of the largest administration building in Hamad Medical Corporation (HMC) as can be seen in the photos attached. All medical Physicists were welcoming the medical and admin staff coming to work at 7:00 am. The staff were interested to talk discuss with the medical Physicists about this occasion and it was good chance to explain the role of Medical Physicists in the hospitals by distributing special leaflets prepared for this purpose. Sweets and cake were distributed for HMC staff in this celebration.

Medical Physicist highlighted the theme of IDMP 2019 so everybody were aware that "It is a Medical Physics World"



**LEBANON** 

The Lebanese Association of Medical Physics (LAMP) has celebrated the International Day of Medical Physics (IDMP 2019) on November 7, 2019 at the Rafik Hariri University Hospital In Beirut, Lebanon.

The event was attended by medical physicists and master students from the Lebanese University. There was a presentation about the event and exhibition of the previous MPW Magazines, Medical Physics

Journals, Physics Today, and related books and Reports of Medical Physics. The participants then joined an open buffet during the gathering.



I would like to acknowledge the following colleagues for sending their corresponding activity lists from their corresponding countries:

- 1. Dr. Khaled Alhadyan, KSA
- 2. Dr. Huda Al- Naemi, Qatar
- 3. Dr. Meshari A- Nuaimi, Kuwait



# IPEM Low and Middle Income

## Sponsorship Award

**Professor Dan Clark** 

Vice President International, Institute of Physics and Engineering in Medicine, United Kingdom

Head of Clinical Engineering, Nottingham University Hospitals NHS Trust, and Professor of Clinical Engineering, Faculty of Engineering, University of Nottingham, United Kingdom



I recently had the pleasure of attending the annual conference of the Institute of Physics and Engineering in Medicine, which in 2019 was held in the great maritime city of Bristol. I was only there for one day, unfortunately, which meant an early train from Nottingham in the East Midlands of England where I live and work down to Bristol in the South West and then catching a late train home, but it was well worth it to attend the event and meet up with colleagues from around the UK.

It's easy to forget sometimes just how fortunate we are to have access to events like this and indeed all the other support and services available from our professional body. When I look back through my career – which, believe it or not, is now well into its fourth decade! – I realise that at every stage I've benefitted from the support and professional activities provided by IPEM and senior colleagues across the profession.

Before I even started working in medical physics and clinical engineering, when I was still a sixth form student, I was introduced to the world of medical physics through IPEM literature (well, it was IPSM back then. No, actually, it was HPA right back then you see how you forget things in your dotage!). And then, when I started work, I was fortunate to go through a training scheme managed through IPSM and supported by senior colleagues right across the regional department where I worked. At every step since then I've been supported by senior colleagues, mentors and peers. I've had access to journals, books, guidance documents, reports and advice. Early in my career I was introduced to scientific conferences: encouraged to attend, then to present, then to chair sessions, then to organise sessions and then to run whole conferences - all through the support of IPEM. I've been involved in a number of Special Interest Groups, chaired one for a while and benefitted from their activities and their outputs on many, many occasions. And, although perhaps less obviously but just as importantly, I've benefitted from the unseen work of IPEM members working on standards, legislation and even lobbying the UK Parliament.

Whatever success I've had, achievements I've made, has been as the result of the support and encouragement of others. If I had had to rely on just my own talents and endeavours, well, things would have been much, much harder.

But that is exactly the case for many medical physicists and clinical engineers working in low and middle income countries (LMIC). If you're lucky enough to be living and working in one of the world's richer countries (and that's about 80 of the 225 countries according to the World Bank) then chances are you'll have access to some sort of professional activity. If, however, you are working in one of the 145 countries categorised by the World Bank as low or middle Income, then the chances are you'll have little or no such support.

Recognising the challenges that medical physicists and clinical engineers can face in these LMICs, IPEM have introduced a new award to help develop professional activities in these countries: the IPEM LMIC Sponsorship Award. Through this award, IPEM seeks to support future healthcare leaders in the field of physics and engineering in medicine from low and middle income countries.

Following a formal but brief application process, successful candidates will receive two years free Associate membership of IPEM. They will also be assigned a senior member of the profession to act as their mentor, to give support and advice and help affect introductions to individuals, organisations and networks that can support professional activities in their area. We're still looking for more people willing to take on these mentoring roles. So, if you're a Full Member or Fellow of IPEM and a senior member of the profession with experience of professional activity, then please consider this opportunity to support colleagues from low and middle income countries and get in touch with the IPEM national office if you are interested in becoming a mentor.

Each sponsored member will also receive a certificate. Worthwhile for its own sake, of course, it is hoped that this will also help increase the individual's credibility with local organisations as the

IPEM badge comes with a recognition of quality and professionalism.

IPEM have also established a new grant: the IPEM LMIC Support grant. Individuals will be eligible to apply for funding from this grant of up to £150 per year of their two-year sponsored Associate membership to support their local activities. This might include travel costs to support conference attendance; establishing a journal club; setting up local workshops; web page support costs or anything that helps support local professional activities. As part of the application process, applicants are expected to describe their plans for local professional activities and this small grant is designed to assist them in delivering this.

Although IPEM is a charity registered in England and Wales our charitable aims are not solely limited to UK-based activity. Indeed, given the disparity in resources and infrastructure between the UK and less developed economies, we have tremendous ability to amplify our charitable aims in a much larger arena by engaging internationally.

Influencing and engaging with national and international bodies is one of the five strategic aims for IPEM and our International Strategy, developed to deliver this aim, recognises the importance of prioritising collaboration with low and middle income countries. This new award is part of our plans to deliver this strategy.

Part of the reason why I went to IPEM's annual conference, as well as to meet up with colleagues and listen to some fascinating talks, was to formally launch the LMIC Sponsorship Award. I hope that by the time you read this, IPEM will be close to selecting the first cohort of sponsored LMIC members. Full details of the award can be found at: www.IPEM.ac.uk/AboutIPEM/International.

### **QaMPS Activities 2019**

#### Dr. Huda Al Naemi QaMPS President

**Workshop on Radiation Protection for Physicians** 



On 16 February 2019, QaMPS organized workshop on Radiation Protection for physicians at WWRC Seminar Room WG 3000, Hamad Bin Khalifa Medical City, in collaboration with HAMAD Medical Corporation (HMC) and Konstantopoulio Hospital, Greece Athens. This workshop aimed at updating the knowledge of physicians working in clinical imaging, those using fluoroscopy machines in their procedures. The course included many fruitful lectures some of these lectures are, Dose management systems and their help in radiation dose optimization, Special practices (pregnant patients, pediatric patients) optimization; as well as Staff Radiation Protection.

Dr. Virginia Tsapaki was the invited speakers from Greece and Dr. Huda Al-Naemi, Dr. Hassan Kharita, Dr Antar Aly and Dr Shady Al-Khazam from HMC side. Almost 22 participants, Radiologists and Radiology staff, have attended the workshops. The workshop topics were very interactive and concentrated on the common challenges in radiation technology.

Training Course on Radiation Protection for Radiographers and Technologists





On 25 February 2019, QaMPS in collaboration with Occupational Health and Safety (OHS) department of Hamad Medical Corporation (HMC) organized Workshop on Radiation Protection for Radiographers and technologists at Bayt Al Dhiyafah Hamad Bin Khalifa Medical City. The goal of this workshop was radiation protection for the staff and radiation workers and included information about; Basic Rules, Protective Equipment, Personal monitoring, Workplace monitoring, Radiation Exposure of Pregnant Workers and Optimization of Protection in Computed Tomography.

Some of the topics discussed in the workshop were Dose management systems and their help in radiation dose optimization, Special practices (pregnant patients, pediatric patients) optimization; as well as Staff Radiation Protection.

Dr. Afkar Al Farsi, was the invited speakers from Muscat, Sultanate of Oman. Almost 60 participants, Radiologists, work in Radiology, were attending the workshops.

#### 1<sup>st</sup> Breast Imaging Workshop

As part of Qatar National Research Fund (QNRF), QaMPS & Hamad Medical Corporation (HMC) organized workshop on Breast Imaging in collaboration with Harvard University, USA in Bayt Al Dhiyafah Hamad Bin Khalifa Medical City on 3<sup>rd</sup> March 2019. The workshop topics were very interactive and concentrated on the common challenges in Brest Imaging. This workshop included Basics of Breast Cancer Screening, BI-RADS reporting standards for Mammography and Ultrasound, Basics of Evaluating Mammography Image Quality and Tomosynthesis Imaging.

Dr. Narayan Anand was the international speakers from USA. His visit also included many meetings with the QNRF project team members (Qatar side) for discussing the project outcomes, as well as meeting with Dr Amal Obaidly breast imaging physicians.

Almost 20 participants, Radiologists, technologists, were attending the workshops. The workshop topics were very interactive and concentrated on the common challenges in radiation technology.

#### **Radiation Protection Training Courses**



**Radiation Protection Training Course for Nurses** 



Refresher Course on Radiation Protection



Safe Working with Medical Lasers and Photography Units

Qatar Medical Physics Society (QaMPS) in collaboration with Hamad Medical Corporation (HMC) has recently conducted a series of training workshops from 09th to 10th March 2019 held at Hamad Bin Khalifa Medical City.

On 09th March 2019, workshop on Radiation Protection for Nurses was held. The aim of the workshop was to ensure that nurses working in areas with ionizing radiation are aware of the techniques in minimizing occupational radiation exposure. About 65 nurses from several healthcare facilities within Qatar participated in the workshop.

Subsequently, Radiation Protection for Laser Safety was conducted on 10th March 2019, which was attended by around 40 healthcare practitioners specifically working in areas involving laser. A refresher course on Radiation Protection was also

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conducted on the same day, which was attended by 26 radiation safety practitioners from different healthcare organization within Qatar.

## Workshop on Optimization of Radiation in Interventional Radiology& Cardiology



QaMPS in collaboration with Hamad Medical Corporation (HMC) initiated a new research project with Konstantopoulio Hospital, Greece Athens, the project title is "Establishment of clinical Diagnostic reference levels for Qatar". A workshop titled "Workshop on Optimization of Radiation in Interventional Radiology & Cardiology" was organized in collaboration with Konstantopoulio Hospital, Greece Athens. The goal of this workshop was to develop and apply technological solutions for patient exposure records, harmonize the dose data formats provided by imaging equipment, increase utilization of electronic health records and updating knowledge and skills about radiation dose optimization in interventional procedures and practical training.

Dr Virginia Tsapaki, the general secretary of International Organization of Medical Physics (IOMP) and the project Principal Investigator (PI) form Greece side was the invited speaker from Greece side and DR. Huda Al-Naemi, Dr. Hassan Kharita, from HMC side.

Almost 68 participants, Radiologists, work in Radiology, were attending the workshops.

## **2**<sup>nd</sup> workshop on Radiation Protection in Nuclear Medicine



On 4<sup>th</sup> of May 2019, QaMPS in collaboration with Hamad Medical Corporation (HMC) organized 2<sup>nd</sup> workshop on Radiation Protection in Nuclear Medicine held at Bayt Al Dhiyafah, Hamad Bin Khalifa Medical City. The goal of this workshop was train nuclear medicine staff on the conditions and requirements of radiation protection in accordance with the nature of the work and the expected risks.

The workshop included many interactive lectures provided by HMC speakers, Mr. Mahmoud Tarbiah, Dr Hadi Fayad and Mr. Osman Taha.

Some of these lectures are;

- Scope of Radiation safety in nuclear medicine
- Exposures types and emergency in nuclear medicine
- Practical training on Radiation Protection
- Dose calculation and optimization

Almost 25 participants, radiologists, technologists, nurses and other specialties working in nuclear medicine, were attending the workshops.

#### **Radiation Protection Training Course for Technicians**



QaMPS in collaboration with Hamad Medical Corporation (HMC) organized Radiation Protection Training Course for Technicians held on 22 June 2019 in Bayt Al Dhiyafa, HBKMC, Doha.

Using of the diagnostic radiology services is common in most of the hospitals and medical centers in Qatar. The risk factor in working with radioactive sources (especially x-ray) is one of the most important factors that limit the spread of this technology (despite its importance). Therefore, HMC observed urgent need to train staff on the conditions and requirements of radiation protection in accordance with the nature of the work and the expected risks

The radiation workers (including technologists and radiographers, etc.) dealing potentially with ionizing radiation, needs regular training courses about radiation protection. It's mandatory to take radiation protection courses every two years for renew their license. Radiation courses are also mandatory for new staff. This course acquired a total of 4.5 CPD hours approved from QCHP and help the staff in their license renewal process.

Dr. Renato Padovani was the invited speakers from Italy and the workshop was attended by 105 participants.

At the end of this activity the participants were benefitted with the following:

- Good radiation protection knowledge.
- Know how to reduce external radiation exposure
- Be aware of the radiation patient safety.
- Have resources to the Self-development in the field of radiation safety.
- Know how to Comply with the international standards in radiation protection.

## Workshop on Optimization and Dose Management issues in CT

In addition to that QaMPS in collaboration with Hamad Medical Corporation (HMC) organized Workshop on Optimization and Dose Management issues in CT, Bayt Al Dhiyafah Hamad Bin Khalifa Medical City on 13 July 2019. Almost 40 participants, CT Radiologists, CT technologists, have attended this workshop. The workshop topics were very interactive and concentrated on the common challenges in CT, Best practices in protocols and radiation, Practical

session: Scanner hands-on activity for some CT protocols and etc.

#### **Workshop on Radiation Protection for Physicians**



On 22 June 2019 QaMPS in collaboration with Hamad Medical Corporation (HMC) organized Workshop on Radiation Protection for Physicians. Dr. Virginia Tsapaki, IAEA expert was the invited speakers from Greece and the workshop was attended by 63 participants.

lonizing radiation is being used in most of the hospitals outside imaging departments in HMC, because of the risks related to these technologies, medical personnel are required to demonstrate proficiency in their proper use. Recognizing an urgent need to train physicians on the conditions and requirements of radiation protection in accordance with the nature of the work and the expected risks this workshop was organized.

This workshop was awarded 5.25 CPD points from QCHP and It's mandatory to take radiation protection courses every two years for staff to renew their license. Radiation courses are also recommended for the new staff.

After successfully attending the workshop we expect enhancement in the radiation protection knowledge and skills for the radiation workers which will lead to:

- Optimize the patient safety (radiation dose reduction)
- Improve the occupational radiation safety for medical staff.
- The primary objective is to minimize radiation exposure to their body and reduce the radiation levels in the work environment.

#### Workshop on Medical physics in diagnostic radiology



As part of International Medical physics Certification board (IMPCB) exam, QaMPS in collaboration with Hamad Medical Corporation (HMC) organized workshop on Medical physics in diagnostic radiology in association with Yale University, USA at Bayt Al Dhiyafah Hamad Bin Khalifa Medical City on 29-30 September 2019. The workshop topics were very important for whom registered on part I and Part II exams. This workshop included Basics of physics and some physics concepts, MRI imaging, Mammography and Ultrasound as well as mathematical concepts.

Dr Adel Mustafa, Associate Professor of Clinical Radiology and Biomedical Imaging

Yale University School of Medicine, USA. Almost 13 participants, medical physicist, were attending the workshops.

National Workshop on Medical Management of Nuclear or Radiological Emergencies



Dr. Huda Al Naemi, president of QaMPS, in collaboration with the Major Incident Planning Department, recently arranged a five-day workshop titled 'National Workshop on Medical Management of Nuclear or Radiological Emergencies'. The event, which was held at the ITQAN Clinical Simulation and Innovation Center from 6 to 10 October, aimed to

create a local team from medical staff who are prepared to act in case of a radiological or nuclear incident.

Two international speakers, Dr. Jason E. Davis, PHD, CHP, Health Physicists from the USA and Dr. Eduardo Herrera Reyes, International Expert in Medical Response to Radiation from Chili delivered informative presentations as part of the event. Both speakers have vast experience in the area of emergency preparedness for radiological incidents and they regularly share their experience during international workshops organized by various organizations around the world.

Staff from the Radiation Safety Section of the OHS Department participated in the workshop by leading practical sessions which focused on the importance of education tools. Different radiation measurement devises and decontamination kits were demonstrated with the goal of making the audience aware of how these tools and instruments might be used in emergency situations. The workshop consisted of scientific lectures and exercises.

Dr. Walid O. Abou Galala, Executive Director of the Major Incident Planning Department took great effort in arranging the workshop by communicating with key staff in each HMC hospital as part of an effort to build HMC's team of train the trainers. The workshop was attended by 40 participants from different hospitals, departments, and specialties.

For the first time in the middle East, HMC host the IMPCB 3 parts exams in Doha for 45 candidates







For the first time Hamad Medical Corporation (HMC) hosted the international Medical Physics Certification Board exams. This is great opportunity for 15 Medical Physicists in HMC to be certified as qualified medical physicists in various specialties in line with one of the HMC goals. Prior to these exams, a two-day medical physics workshop was conducted as continuous professional education for medical staff. Dr Huda Al Naemi, the Executive Director for the Occupational Health and Safety and the President of the Middle East Federation for the Organization of Medical Physics (MEFOMP) in collaboration with Dr Abdullatif Al-Khal Chief of Medical Education Department in HMC have worked together for long time to organize this international event in Qatar.

The examination is conducted by a team of seven IMPCB examining faculty selected by the Board Examination Committee. 45 candidates from different countries like Mexico, Brazil, Georgia, Pakistan, Afghanistan, Jordon, Lebanon and Iraq etc around the world participated in this examination which is the highest number of candidates comparing to other

exams conducted previously. This is considered as International recognition for Qatar and HMC as a hub for medical physics certification.

The mission of the International Medical Physics Certification Board (IMPCB) is to support the practice of medical physics through a certification program to achieve the goal of improving the quality of patient care in diagnostic and therapeutic medicine. The IMPCB conducts a three-part Board Examination in several medical physics imaging and therapy subspecialties worldwide, with emphasis on parts of the world that lack certification programs. Over the past two years examinations have been held in Mexico, Bangladesh, Italy (several times), Czech Republic, Austria and Chile.

## QaMPS organize workshop in Radiation Protection in Medical Field





Qatar Society for Medical Physicists (QaMPS) in cooperation with Hamad Medical Corporation (HMC) organized a workshop for Medical Radiation workers under the title of "Radiation Protection in Medical Field".

Dr. Huda Al Naemi, President of QaMPS and Executive Director of OHS Department opened the workshop and welcomed the speakers Dr. Hassan Kharita-Assistant Executive Director Radiation Safety, HMC, Dr. Zakiya Al Rahbi-Head of Quality Assurance, Planning and Radiation Protection, National Oncology Center, The Royal Hospital, Muscat, Sultanate of Oman, Dr. Ibtesam Nasser Al-Maskari-Superintendent and Chief Medical Physicist, Department of Radiology Molecular Imaging, Medical Physics Unit, College of Medicine and Health Sciences, Sultan Qaboos University, Sultanate of Oman and Dr. S. Adam Stratz-Office of Weapons of Mass Destruction Terrorism, Bureau of International Security and Nonproliferation, U.S. Department of State.

Dr. Huda delivered a presentation on emergency preparedness for radiation incidents while Dr. Adam presented the nuclear security system. In the afternoon, a practical session was organized with the whole team of Medical Physicist who played a role to scan and decontaminate the casualties in case of radiological incidents, 15 Physicists were wearing the full protective equipment or suit to demonstrate the real scenario for the audience. 120 medical staff from HMC have attended the workshop and they cooperate and interact with the drill in positive way.

The feedback of the workshop was very good, and the audience was very satisfied with this education session.





## OBITUARY: Prof. Barry J Allen, PhD, DSc, AO

The International Organization for Medical Physics (IOMP) informs with great sadness that Prof. Barry J Allen, President of IOMP from 2006 to 2009 passed away on 21 November 2019 in his home in Australia.

Prof. Barry J Allen graduated MSc in nuclear physics at the University of Melbourne. After this he joined the Australian Atomic Energy Commission (AAEC) at Lucas Heights in 1963. His work was mainly associated with Radiotherapy research, but also with research in other areas of physics applied to medicine. He convened the Fourth International Symposium for Neutron Capture Therapy in Sydney in 1990. He designed the first human Body Protein Monitor (BPM) in Australia. He commenced the Targeted Alpha Therapy (TAT) project in 1994 at St George Hospital, and was the designer and Study Director of two world first trials of intralesional and systemic targeted alpha therapy for metastatic melanoma. He was Director of the Centre for Experimental Radiation Oncology at St George Hospital in Sydney. He has published over 330 papers in neutron and biomedical physics. In 2011 he co-authored the text book "Biomedical Physics in Radiotherapy for Cancer" with Drs. Eva Bezak and Loredana Marcu.

Prof. Barry J Allen has been awarded Fellowships by the Australian Institute of Physics (1972), the American Physical Society (1981), the Australasian College Physical Scientists & Engineers in Medicine (1992), the Institute of Physics (1999), the International Organization for Medical Physics (2013). Prof. Barry J Allen has been elected President of the International Society for Neutron Capture Therapy (1988), the Australasian College of Physical Scientists & Engineers in Medicine (1998) the International Organization for Medical Physics (2003).

Prof. Barry J Allen had very active international work on the global development of medical physics. He is one of the Founders of the Asia-Pacific Federation of Medical Physics (AFOMP), being its first Vice-President and second President. In this position one of his activities was the facilitation of the formation of the Vietnamese Association for Medical Physics. In 2003 he was President of the World Congress in Medical Physics and Biomedical Engineering in Sydney. In the same year he was elected Vice-President (President-Elect) of IOMP. He was President of IOMP in the period 2006 to 2009. During this period, among many other activities, he supported the formation of another Regional Organisation of IOMP – the Middle East Federation of Medical Physics (MEFOMP). From 2009 to 2012 Prof. Barry J Allen was President of the International Union of Physical & Engineering Sciences in Medicine (IUPESM). In this position, among many other activities, he was the inaugural Chair of the Health Technology Task Group, which aims at assisting developing countries in the implementation of appropriate medical technologies.

At the 50th Anniversary Conference on Medical Physics (Brighton, UK, 2013) Prof. Barry J Allen was included in the list of 50 outstanding medical physicists over the past 50 years.

In 2015 Prof. Barry J Allen was appointed an Officer in the Order of Australia award in the Queen's Birthday honours list. The citation read "for distinguished service to biomedical physics, particularly to radiation oncology and the development of innovative methods of cancer treatment, and to international professional scientific organisations".

We worked with Prof. Barry J Allen for a number of years and have met him and his wife Cynthia many times. Barry was an excellent person with great sense of humour, he was professional of the highest calibre and an outstanding leader. Prof. Barry J Allen will be missed by our whole professional community!

On behalf of the IOMP Executive Committee we are sending deepest condolences to the family of Prof. Barry J Allen.

On behalf of the IOMP Executive Committee we express heartfelt thanks to Prof. Barry J Allen for his enormous support for the development of medical physics – his legacy will be forever with our profession!

Prof. Slavik Tabakov, PhD, Dr h.c., FIPEM, FIOMP IOMP Past-President, IUPESM Vice-President

Prof. Madan Rehani, PhD, FIOMP IOMP President

## **Calendar of Events**

# Stereotactic Radiosurgery and Stereotactic Body Radiotherapy Physics

When: Dec 2 - 5, 2019

https://www.elekta.com/services/education-and-

training.html

# 11th Canadian Winter School on Quality and Safety in Radiation Oncology

When: Feb 2 - 6, 2020

Where: Mont-Tremblant, QC, Canada

http://www.comp-ocpm.ca/2020-winter-school/

## The 6th International Conference on Radiation Medicine

When: 09 to 13 February, 2020.

Where: Alfaisal University, Riyadh, Kingdom of

Saudi Arabia

Organizer: KFSH&RC, IAEA and Alfaisal

University.

#### 5th CONFERENCE ON SMALL ANIMAL PRECISION IMAGE-GUIDED RADIOTHERAPY

When: Mar 9 - 11, 2020 Where: Munich, Germany

http://small-animal-rt-conference.com/

## NCRP 2020 Annual Meeting: March 23-24, 2020

When: Mar 23 - 24, 2020Where: Bethesda, MD, USA

## Optimization in X-ray and Molecular Imaging (OXMI) 2020

When: Apr 20 – 22, 2020 Where: Gothenburg, Sweden

www.oxmi2020.org info@oxmi2020.org

#### 2nd European Physics Conference

When: May 4 – 5, 2020 Where: Chicago, IL, USA https://physics.madride.com

#### NACP2020 symposium

When: May 10 – 12, 2020 Where: Reykjavík, Iceland

www.nacp2020.org

#### 8th MR in RT Symposium

When: May 25 - 27, 2020

Where: Zollhofgarten 2, 69115 Heidelberg,

Germany

www.dkfz.de/mrinrthd2020 mrinrthd@dkfz-heidelberg.de

## CARS 2020 Computer Assisted Radiology and Surgery

When: Jun 23 - 27, 2020

Where: Munich, Germany (map)

https://www.cars-int.org
office@cars-int.org

## 62<sup>nd</sup> AAMP Annual Meeting & Exhibition

When: Jul 12 - 16, 2020

Where: Vancouver, BC, Canada

https://www.aapm.org