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Newsletter

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THE PRESIDENT'S CORNER

Dr. Taofeeq Abdallah IGE (Nigeria) – igetaofeeq@yahoo.com

Dear Colleagues and Friends. It is with utmost joy and satisfaction that I welcome you all to peruse the second issue of our newsletter. Exactly mid-way (Oct. 2017 – 2020) into the tenure of our mandate as the Executive Committee of this noble professional body, we wish to appreciate and thank the Medical Physics' fraternity in the region and we solicit for more dedication, sacrifice and support as we forge ahead to deliver the expected and necessary dividends to take the Medical Physics profession in Africa to the "Next Level". The recently inaugurated FAMPO Council is anticipated to play a catalytic role in bringing the governance of the organization to the member organizations therefore, council members are enjoined to be alive to their responsibilities. Awareness of our roles in the radiation medicine family will be better appreciated by performing to the extent possible the quality control and overall quality assurance of the equipment and facilities under our care. The annual International Day of Medical Physics (IDMP) celebration with sound scientific sessions will also go a long way in bringing the necessary memories alive and colleagues are encouraged to firm up these activities in their national calendars. **Long live FAMPO!**

IAEA/AFRA REGIONAL TRAINING COURSE ON CT QUALITY ASSURANCE AND DOSIMETRY HELD IN ZAMBIA

Mr. Christoph Trauernicht (South Africa) – cjt@sun.ac.za

The local course organizer, Ms Chanda Barbara M'ule, pulled out all the stops and organized this training course. Four experts were appointed to facilitate the lectures and practical sessions. These included Harry Delis from the IAEA, Mika Kortensniemi, Chief Physicist from the University of Helsinki, Chris Trauernicht, Head of Medical Physics at Stellenbosch University, and Mahadevappa Mahesh, Chief Physicist at the Johns Hopkins Hospital.

With computed tomography (CT) becoming more popular and common in Africa, this course came at a good time and offered deeper insight into how to use CT safely and appropriately.

Fifteen participants from eleven countries, as well as two local participants, attended this training course. The course was opened by a representative of the Ministry of Health, namely the Director: Clinical Care and Diagnostic Services.

The course lectures varied from basic CT physics to quality management in CT, DICOM information in CT, CT dosimetry, foetal dosimetry, paediatric and cardiac CT imaging, reconstruction algorithms and CT optimization. Practical sessions on basic quality control and CT dosimetry were held on the newly installed CT scanner at the Cancer Diseases Hospital. Participants learned how to use ImageJ, a freely available imaging software, to estimate patient doses from information in the DICOM headers, and how to obtain some basic quality control parameters from CT images. Diagnostic Reference Levels in CT were discussed.

The IAEA hosts a free online training course on "Radiation Dose Management in Computed Tomography" on their e-learning platform. This course comes highly recommended!

The course was well organized and structured with good administrative and logistical arrangements. Participants were grateful for the learning opportunity at the end of the week-long training course, the attendees were fairly confident that they would be able to implement some of the tools they learned and knowledge they gained.



GLOBAL HEALTH CATALYST SUMMIT HELD IN TANZANIA

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The Global Health Catalyst (GHC) Summit was held at the Kunduchi Beach Hotel in Dar es Salaam, Tanzania, from 01 – 04 April 2019. The meeting which was themed “From Palliative to Curative Care” brought together over 40 participants from Africa, Europe and Northern America. The Summit was organized by GHC and hosted by the Ocean Road Cancer Institute (ORCI), with support from high profile agencies including University of Pennsylvania, Harvard Medical School, FAMPO, Varian Medical Systems, PTW, Medical Physics for World Benefit, Muhimbili University of Health and Allied Sciences (MUHAS), Best Care Foundation, AORTIC and Centre for Global Health.

Topics discussed at the Summit included dosimetry measurements, quality assurance, e-learning, 2D-3D migration, development of Medical Physics education programmes and development of clinical trials. The Chair of the Organizing Committee, Prof. Stephen Avery, encouraged the formation of partnerships aimed to promote the development of Medical Physics and related professions in the Africa region. On his part, Prof. Twalib Ngoma of MUHAS urged all interested parties not to relent in their efforts to support medical physicists.

Keynote talk at the Summit was focused on cancer of the cervix and was delivered by Prof. Olubunmi Abayomi of Howard University in the USA. Dr. Francis Hasford, Secretary General of FAMPO, gave a talk about FAMPO’s role in the development of Medical Physics in Africa. Other speakers include Prof. Jake Van Dyk of Western University in Canada, Prof. Will Ngwa of Harvard Medical School in the USA, Prof. Godfrey Azangwe of National University of Science and Technology in Zimbabwe, and Prof. John Schreiner of Queens University in Canada.

The Eradicate Cancer for All (eCancer4all) campaign, contouring and treatment planning online platforms, PTW dosimetry school and emerging technologies in radiotherapy were introduced. Dr. Julius Mwaiselage, Executive Director of ORCI, presented an overview of ORCI and indicated the tremendous support of the Tanzanian Government in the installation of new radiotherapy equipment, including linac and simulator, valued at 4 mil USD.

The GHC Summit is a premier yearly event at Harvard with satellite conferences in Europe and Africa dedicated to catalyzing high impact international collaborations to eliminate global health disparities, with main focus on cancer and related diseases.



THE IOMP ACCREDITATION BOARD

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The IOMP website states “Accreditation is the means by which IOMP assesses the quality of medical physics postgraduate degree programs and CPD courses and keeps the medical physics community informed. The IOMP Accreditation Board has been set up to ensure that accredited medical physics programs satisfy the highest standards established by IOMP in collaboration with other international organizations.”

The Accreditation Board consists of eight members and is chaired by Prof Arun Chougule from India. The IOMP Accreditation Board operates under the guidance of the IOMP Education and Training Committee, which in turn reports to the IOMP Executive Committee.

The Board has been working on a recommendation for Continuing Professional Development (CPD) for medical physicists. A draft document for accreditation of CPD events provided by educational institutions, professional and scientific associations, hospital departments, units or divisions, research organizations and other scientific organizations has been published in the “Accreditation” section on the IOMP website. The ICMP2019 congress will likely be the first event to trial run this document, but other CPD events are also encouraged to apply for accreditation.

The writer is a member of the IOMP Accreditation Board

SECONDARY CANCER RISKS IN RADIATION TREATMENT

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The importance of assessing secondary cancer risks after radiation therapy has been acknowledged by several international organizations and researchers. Modern treatment modalities such as intensity modulated radiation therapy (IMRT) produce large amounts of scatter, leakage and neutron radiation. These radiations have been found to be directly proportional to the risk of second cancer incidence.

Results from a 3-year study performed at three radiation oncology centres in Egypt (i.e. National Cancer Institute, Children Cancer Hospital and Ayady Al Mostakbal Oncology Center) indicates increased dose for out of field organs at risk (OAR) with IMRT compared to 3D conformal radiotherapy (CRT), translating into higher probability of secondary cancer induction in IMRT comparatively. In IMRT, larger volume is irradiated to lower doses because total monitor units (MUs) in IMRT is higher than that of 3D-CRT. For OAR in in-field with IMRT, lower doses are received, allowing significant reduction in the doses in infield OAR compared to 3D-CRT.

Research studies including Bartkowiak et al. (2012), Schneider (2011), De Gonzalez et al. (2012), Sykes et al. (2013), Kim et al. (2013), etc. highlight the need for assessment of secondary cancer risks for patients who undergo radiation treatment with modalities such as 3D-CRT, IMRT, Image guided radiotherapy (IGRT) and Volumetric modulated arc therapy (VMAT).

IAEA INSTALLS NEW RADIOTHERAPY EQUIPMENT TO HELP COUNTRIES FIGHT CANCER

The International Atomic Energy Agency (IAEA) has received a new medical linear accelerator and the equipment used for radiotherapy is being installed at its Seibersdorf laboratories. It will greatly enhance the Agency's capacity to support the application of this technology to the benefit of cancer patients around the world.

The new linear accelerator, linac for short, has been provided to the IAEA under a partnership with Varian Medical Systems. Under the partnership agreement, the manufacturer is making the linear accelerator available to the IAEA at no cost for a period of 10 years. The United States Department of Energy has provided a USD 1,250,000 grant to cover maintenance costs for the first five years.

"We look forward to beginning operations in the coming months, significantly expanding the services we offer to Member States," IAEA Director General Yukiya Amano said at the opening of the Agency's Board of Governors meeting this week, adding that installation of the linear accelerator started last month. The equipment is worth around Euro 2.8 million, and the loan from the manufacturer represents the largest IAEA partnership with the private sector to date.

The use of medical linear accelerators in the management of cancer has been growing rapidly. According to the IAEA's Directory of Radiotherapy Centres (DIRAC), there are at least 12,000 such machines in operation in hospitals worldwide. For many years, machines using radioactive cobalt-60 sources were predominantly used to administer critical radiotherapy treatment. In the last decades, however, health care providers have increasingly switched to linear accelerator technology, as this offer more versatility in the delivery of radiation doses to target tumours. Since the radiation is generated with electricity, it also avoids safety and security concerns that accompany the management of radiation sources, although it relies on a steady supply of electricity.



The linear accelerator will be housed in the Dosimetry Laboratory, which is one of eight IAEA Nuclear Applications laboratories in Seibersdorf, Austria. Dosimetry was one of the first laboratories established by the Agency at its Seibersdorf complex in 1962. The Laboratory offers audits to hospitals worldwide to ensure radiotherapy equipment is well calibrated for effective cancer treatment. Small dosimeters are sent to participating hospitals and irradiated, and the dose is then evaluated by the IAEA Dosimetry Laboratory for accuracy. Differences as small as 5 per cent from the intended radiation dose can significantly affect the outcome of therapy. These audits have been operated through an IAEA and World Health Organization network since 1969.

Between 2015 and 2018, linear accelerator beams accounted for approximately 85 per cent of all audits carried out at the IAEA Dosimetry Laboratory. "The new linac will allow us to provide a broader range of dosimetry services corresponding to the current technology level at radiotherapy centres, including low- and middle-income countries," said Joanna Izewska, Head of the Dosimetry Laboratory. "It will also enable us to offer more training opportunities, and to carry out advanced research in medical radiation physics."

Cancer is one of the leading causes of mortality worldwide, and in 2018 alone was responsible for 9.6 million deaths. Radiotherapy – whether through linear accelerators or cobalt-60 machines – use high energy radiation to kill tumour cells and is a key component in the treatment of the disease. The IAEA supports national governments in using nuclear science and technology to better diagnose, treat and manage cancer.

Source: IAEA, Vienna

<https://www.iaea.org/newscenter/pressreleases/iaea-installs-new-radiotherapy-equipment-to-help-countries-fight-cancer/>

EGYPT AND JAPAN COLLABORATE IN MEDICAL PHYSICS WORKSHOP

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Medical Physics in Egypt is undergoing a new move with a new vision. The new generation of medical physicists have a potential to redefine new terms and code of practice, not only on the national level but also on global and international standards. This article describes one of the recent events that took place in Helwan University that is located south of Cairo, Egypt, where there was a mutual scientific exchange between Egypt and Japan from 25 – 28 March, 2019. The event generally focused on different topics of medical physics with special emphasis placed on advanced technologies and techniques in imaging physics in both countries. The first two days of the conference were mainly designed for talks and presentations while the last two days were assigned for practical workshop on image processing and simulation techniques.

The Japanese speakers were from the Cyclotron and Radioisotopes Center (CYRIC), Tohoku University, as well as from National Institutes for Quantum and Radiological Science and Technology. The Egyptian speakers were from Department of

Physics, Helwan University; Faculty of Medicine, Cairo University; National Cancer Institute; Egyptian Atomic Energy Authority (EAEA) and graduate students of Beni-Suef University.

The topics covered were numerous and of particular clinical and technical interest. The status of nuclear medicine in both countries as well as new advances in nuclear medicine instrumentation were highlighted and discussed. Moreover, a comprehensive overview was provided for the production of radiopharmaceuticals and radioactive handling including protection and safety issues.

It appeared that there are many points of collaboration between the two sides which can be in the form of production of radioisotopes, labeling strategies, imaging techniques, image analysis and data processing. The meeting was so successful in exchanging the different views and perspectives that could be utilized in bridging the gap and opening new avenues between the two partners.



“TRAIN THE TRAINERS” WORKSHOP FOR MEDICAL PHYSICISTS IN AFRICA EMPHASIZED NEED FOR REGIONAL COLLABORATION

By Ms. Nathalie Mikhailova (IAEA)

In a continent with a shortage of medical physicists and training facilities for them, regional cooperation in training is key for effective and safe cancer care. The IAEA held the first ever training workshop on how to establish clinical training programmes for radiotherapy medical physicists using regional cooperation in Abuja, Nigeria from 18 to 20 December 2018.

Medical physicists play a central role in ensuring the safety, quality and effectiveness of radiation diagnosis and treatment of patients with diseases like cancer and cardiovascular diseases. Clinical medical physicists typically undertake comprehensive, structured and supervised clinical training to acquire the needed competencies to work in a hospital and contribute to patients' healthcare.

The workshop, held in the framework of a regional technical cooperation project, consisted of lectures and discussions, focused on how to establish and manage clinical training programmes, including in-depth discussions on the role of supervisors and coordinators, the assessment of the competencies that have been acquired by the residents, and the equipment required to offer clinical training.

Twenty participants from 12 countries participated in the course, which was based on guidelines by the IAEA and the African Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA). The pre-course exercises and group work performed during the event focused on highlighting the importance of coordination and regional collaboration, and provided participants with tools in enhancing cooperation.

“I learnt about the equipment, personnel and infrastructure needed to set up a training programme, as well as how to evaluate the training to ensure quality and competence,” said Elly Okoko, a medical physicist at the Kenyatta National Hospital in Nairobi. “In Kenya, where we are about to start a clinical training programme, it was an eye opener and a welcome supplement of information for areas we might not have included.”

Taofeeq Ige, course director and President of the Federation of African Medical Physics Organizations (FAMPO), highlighted the importance of raising awareness on the role that medical physicists play in patient care. “This course is important for regional cooperation, focusing on connecting medical physicists in the region to share human and technological resources,” he said.

The workshop emphasized the role of participants in promoting clinical training in their countries. “This training motivated me to inform the government of Mauritius and the University of Mauritius on the role we could play in developing national training with regional coordination,” said Payaniandi Pooparlen Velen, a medical physicist at the Victoria Hospital in Mauritius.

For cases in which not all competencies needed can be provided locally, for example due to a lack of supervisors or a piece of equipment, medical physicists need to visit other institutions to complete their training, Velen said. It is this kind of cooperation that this workshop facilitated.



This workshop was held in the framework of an IAEA regional project on improving access to quality radiotherapy treatment in Africa through sustainable human resource capacity building. The primary objective of this project is to improve the quality of treatment for cancer patients through the harmonization of training in medical physics and radiation oncology, skills upgrade and promotion of good practice for all radiotherapy professionals.

Source: IAEA, Vienna (published on 06 March 2019 at <https://www.iaea.org/newscenter/news/>)

GHANA – NORWAY PARTNERSHIP FOR MEDICAL PHYSICS AND RADIOGRAPHY EDUCATION

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The main goal of the Norwegian Partnership Programme for Global Academic Cooperation (NORPART) Project is to establish a partnership for education and research between institutions in Ghana and Norway within the fields of Medical Physics, Radiography and Radiation Protection. The project results in student mobility between Ghana and Norway on Master and PhD levels, as well as mobility of staff. The other major activity under the project is the Annual Summer School which is held in Ghana.

The Summer School in diagnostic imaging and radiotherapy is held at different locations in Ghana for students and practitioners of Medical Physics, Radiography and Radiation Protection. The topics covered vary for each year. The lecturers are both academic and clinical staff recruited from partner institutions in both countries. The participants have come from the different regions of Ghana, and other parts of the World. The Summer School is a meeting place for both students and staff. Scientific presentations by participants are gradually being introduced as an important part of the School. Through this, the Summer School will grow into one with solid theoretical, practical and scientific components.



Three editions of the Summer School have been held in Accra and Tamale in 2016, 2017 and 2018. The 2016 and 2017 editions were held at the Korle-Bu Teaching Hospital in Accra under the themes “Quality Control and Radiation Protection in Diagnostic Imaging” and “Radiological Imaging for Breast Diseases (Benign and Malignant) Diagnosis and Management”, respectively. The 2018 edition was held from 25 – 29 June 2018 at the University for Development Studies, Tamale, under the theme “MRI, Ultrasound and X-Ray Imaging”. Participants in the three editions were nationals of Ghana, Niger, Nigeria, Norway, Tanzania, USA and Zimbabwe. Over 130 participants have so far benefitted from the Summer School.

The Student Exchange Programme is focused on students in Medical Physics, Radiography and Radiation Protection from Ghana spending 1 – 2 terms at the Norwegian University of Science and Technology (NTNU) as part of their Masters and PhD degrees. The exchange stay may involve taking regular courses or working on the master thesis. Since its inception, 7 students from Ghana have benefitted from the mobility programme, two of whom are PhD candidates.

At the end of the 5-year period, the project seeks to achieve its main goals through increasing mobility of Medical Physics and Radiography students between the partner institutions; increasing contact between and mobility of academic staff at the partner institutions; and increasing quality and internationalization at the level of Master and PhD study programs in Medical Physics and Radiography at the partner institutions. Through the project, there has also been a donation of a mobile X-ray unit to the School of Nuclear and Allied Sciences of the University of Ghana, which is the main partner institution in Ghana under the NORPART Project.



NATIONAL TRAINING COURSE ON TRANSITIONING FROM 2D TO 3D CONFORMAL RADIATION THERAPY IN NIGERIA

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The Nigeria’s National Training Course on Transitioning from 2D to 3D Conformal Radiation Therapy was held at the New Radiotherapy Centre of National Hospital Abuja from 26th to 30th November 2018. The training had the following participants - 14 Medical Physicists, 9 Radiotherapists and 20 Radiation Oncologists from Lagos University Teaching Hospital (LUTH), University of Nigeria Teaching Hospital (UNTH), Usmanu Danfodiyo University Teaching Hospital (UDUTH), University of Benin Teaching Hospital (UBTH) and National Hospital, Abuja (NHA).

The Training course which was aimed at improving the practice of using ionizing radiation to treat cancer patients with particular emphasis on improving the contouring skills of the Radiation Oncologists in the country was facilitated by three IAEA experts viz: Prof. Ehab Attalla (Medical Physicist), Prof. Tarek Shouman (Radiation Oncologist) and Ms. Theresa Binz (Radiotherapist). The training organized by International Atomic Energy Agency (IAEA) through its technical cooperation project had several lecture presentations and 19 practical sessions. These featured contouring exercises, dose calculation and evaluation, patient set-up and immobilization among others.

The program came at a very critical time in the history of radiation therapy in the country. Some new equipment have recently been procured and installed. The training has really helped Nigeria to consolidate the learning of these new

techniques and consequently standardized the practices, particularly at the National Hospital Abuja.

In his remarks the course coordinator – Dr. Taofeeq Ige, thanked the National Hospital management, the Federal Ministry of Health and the IAEA for the successful implementation of the course. He further urged the IAEA not to relent in the continuous assistance to Nigeria as the country takes the next steps in the provision of efficient and safe radiotherapy service delivery to her teeming population.

The participants were issued a certificate at the end of the course. A greater percentage of them affirmed that the training course clearly met the defined aims and objectives as they look forward to implementing what they have learnt in their various institutions and look forward to attend subsequent courses as part of the continuous professional development.



UPCOMING EVENTS

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24 - 28 June 2019

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Call for Applications
Deadline: 14th April 2019

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SAAPMB CONGRESS

The annual congress of the South African Association of Physics in Medicine and Biology (SAAPMB) will be organized in Cape Town from 28 October – 01 November 2019. Website coming up soon.....

Special reduced rate for FAMPO members!

NEW COMPETITION BY IAEA

The IAEA is organizing the “New Competition: Towards a Strong Radiation Safety Culture in Medicine”.

<https://www.iaea.org/newscentre/news/new-competition-towards-a-strong-radiation-safety-culture-in-medicine/>

Top three winners will receive IAEA support to travel and present their work in Vienna, Austria.

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ABOUT FAMPO

The Federation of African Medical Physics Organizations (FAMPO) is the regional federation of the International Organization for Medical Physics (IOMP) in Africa. FAMPO is a non-profit-making organization established in March 2009 to promote the application of physics in medicine.



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