



South Asia Centre for Medical
Physics and Cancer Research

SCMPCR

Newsletter

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QUALITY EDUCATION AND HEALTH SCIENCE FOR PATIENT BENEFIT

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Editor's Notes

"SCMPCR has come a long way in efficiently implementing quality medical physics education and professional development in South Asia in the last four years. SCMPCR Newsletter provides a platform for budding medical physicists of the region to share their professional, academic and research activities among peers and to build a strong network of professional collaborations. The leaders of SCMPCR have taken extraordinary measures to overcome the impediments in educational and professional development activities worldwide due to Covid-19. The virtual seminars and the e-learning programs organised by SCMPCR have played a pivotal role in uplifting the morale of medical physicists in the pandemic-affected world. Humanity has proven once more that we strive to thrive amidst all struggles through mutual support and provision. We could also enhance the SCMPCR activities in its member countries during this time. Many have come forward with indigenous ideas for continuing medical physics education and training and improving outreach to the distant. The number of activities organised, the proportion of research work carried out and the sum of achievements by medical physicists stand as a testament that together, everyone achieves more. In this edition of the SCMPCR newsletter, we also tried to encompass and project everyone from South Asia to a greater audience."

Editor-in-Chief &
Co-Editor-in-Chief,
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Role of Alo-BT in Maintenance and Quality Control of Diagnostic Machines in Hospitals

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In Bangladesh, currently, over 4,000 medical devices and equipment are used in the country [1]. With the rapid growth of medical technology in industrialized countries over the last 30 years, biomedical/clinical engineering was introduced. However, this is an entirely new notion in emerging countries such as Nepal, Bangladesh, Malaysia, and others. According to world health organisation (WHO) guidelines, Bangladesh requires one biomedical engineer for every 10,000 inhabitants. As a result, Bangladesh needs approximately 16,000 biomedical engineers.

Alo Bhubon Trust (Alo-BT) has been improving the current situation through in-service training since 2019. It is being invited experienced experts from many nations to train doctors, nurses, technicians, medical physicists, and biomedical engineers in various private and public hospitals.

In 2022, in response to a request from the National Cervical and Breast Cancer Screening and Training (NCCBCST) at BSMMU, an Eng. Mr. Ioan Pauliuc from Germany (specialized in X-ray equipment, computed tomography (CT), anaesthetic and respiratory equipment, electromechanics, hydraulics, and mechanics) was brought in for a three-week training from January 15 to February 4 for the training of nurses and technicians for cervical screening equipment. Mr Kazim Uddin Olin, Biomedical Engineer (student) on behalf of the Alo Bhubon Trust, was always with him and assisted the trainees in conjunction with the foreign instructor, as well as doing his best to ensure that the trainees understood the instructor's lecture by translating it into Bengali and assisting in the practical lessons. Prof. Dr. Ashrafunnessa, Department of Gynecological Oncology and Project Director, and Focal, NCCBCST, Bangabandhu Sheikh Mujib Medical University (BSMMU), along with her team, assists Alo-BT personnel and instructors in a seamless training process.

Training Equipment:

Training sessions were held for four different types of equipment frequently used in operation theaters. For each machine, functions and insides were explained and specific parts pointed out which require frequent inspection and quality assurance. For all devices frequent inspection of power supply and cables is required:

- The Thermo Coagulator (WISAP machine) applies a high-frequency (radio frequency) alternating polarity, electrical current to biological tissue as a means to cut and coagulate tissue. Parts that need frequent quality control are e.g. the probe, the probe cable.
- Diathermy machines use short wave or microwave radio waves or ultrasound to produce heat in tissue. Parts needing quality assurance are e.g. the circuit boards and patient plate.



Figure 1: Training session: Nurse and technicians, BSMMU, CMCH, and KMCH (from the top).



Figure 2: Providing Instruction: OT Equipment

- Sucker machines extract fluids from the surgical site by suction into an evacuated glass jar. Parts needing frequent inspection are the suction tube, the filter, and the jar inside the machine.
- Colposcopes are devices used to examine the female cervix uteri for cancerous changes by inspection via the vagina with a sort of microscope. Parts needing regular QA are e.g. the lenses, the cold light source, and the optical cable.

Training Information:

Nurses, technicians, and biomedical engineers were trained at the following locations with various batches and classes (Figure 1).

- Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, with 68 participants (5 batches, 10 classes) from the districts of Rajshahi, Pabna, Magura, Manikganj, Jessore, Jhenaidah, Faridpur, Sirajganj, Joypurhat, and Naogaon from January 16 to 27th, 2022.
- Chattogram Medical College Hospital (CMCH), with 14 participants (1 batch, 2 classes) from the districts of Chittagong Comilla, Brahmanbaria, Feni, Naogaon, Noakhali, Cox's Bazar from January 29th to 30th, 2022.
- Khulna Medical College Hospital (KMCH), with 12 participants (1 batch, 2 classes) from the districts of Khulna Kushtia, Narail from February 1st to 2nd, 2022.

Topics covered in the training course

For Nurses:

1. Identifying the specific parts of the machine during machine damage/ malfunction.

2. Materials used to clean the machine and lens.
3. Importance to clean the machine as well as the treatment room.
4. Procedure to change damaged parts of the machine (minor parts).
5. The procedure of the use of the machines for its better outcome and sustainability.
6. Emergency steps for sudden machine damage in the treatment time.

For Technician and Engineer:

1. To find the problem and its solution as well as repair any machine.
2. Use of tools (multimeter, oscilloscope).
3. Finding the specific cause for the defined problem.
4. Relation between nurse and the technician and their job responsibility.
5. Importance of use of Menu book and toolbox in each area.

Mr. Ioan Pauliuc was at the BSMMU OT (Operation Theatre) and ICU (Intensive Care Unit) room and discussed with an on-duty biomedical engineer how to upgrade the OT and ICU rooms (Figure 2). Nurses from other hospitals brought their malfunctioning machines to be repaired and instructed. During training, the following equipment was refurbished.

Medical equipment must be kept in proper working order and calibrated periodically to ensure its effectiveness and accuracy. Hospital staff had the opportunity to learn more about biomedical instrumentation and general medical issues through this training. Along with the government of Bangladesh, SCMPCR (one of Alo Bhubon Trust's projects) also has been working to develop skilled manpower in BME/CE and improve diagnostic radiology quality in districts and rural hospitals.

Reference:

1. Healthcare & Medical Device Industries, Bangladesh Investment Development Authority (BIDA), www.bida.gov.bd June 2021



SCMPCR E-Learning Program 06: Clinical Medical Physics in Modern Radiotherapy: My Views and Experience



Ms. Bushra Intakhab
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Sindh Institute of Urology and
Transplantation-SIUT Hospital,
Karachi-Pakistan
Moderator ELP-06

Medical Physicists significantly contribute to the effective diagnosis and treatment of cancer patients. Unfortunately, hospitals and policymakers often underestimate the importance of medical physicists, especially in the South Asia region. The emergence of the South Asia Centre for Medical Physics and Cancer Research (SCMPCR) is a blessing for medical physicists in this region. SCMPCR was established in 2018, and since then constantly trying to create skilled human resources for cancer treatment through different categories of programs using a national and international approach.

SCMPCR arranges meetings, seminars, workshops, hands-on training, in-service training, e-learning and awareness programs with national and international experts for the mass people and relevant personnel of the different fields in health sectors. An E-Learning program is one of the best ways to educate and enhance the knowledge of medical physicists, especially the young ones.

I was pretty happy when I received a message from Professor Anupama Azhari

ma'am, regarding the opportunity to moderate a session in the 6th E-Learning Program (ELP). I received an email from Mr. Shemanto to select any of the sessions. I was quite nervous about moderating a session as all speakers are experts from their respective fields, and I opted for the second session according to my schedule. Prof. Dr. Golam Abu Zakaria sir and Prof. Dr. Hasin Anupama Azhari ma'am always motivated and provided equal opportunities to young medical physicists. Being a part of any of its programs is one of the best opportunities to learn and grow.

SCMPCR organized the 6th ELP, a project of Alo Bhubon Trust in collaboration with Global Access to Cancer Care Foundation, United International University and LAP Lasers. This course consists of a series of lectures that aims to enhance participants' knowledge of safety standards and good practice in radiotherapy and to support improving their practical skills and competencies in this field. The lectures have demonstrated the basic to advance theoretical and clinical aspects of modern radiotherapy practices among participants. A 20 CPD point has been

awarded for this E-learning Program by the International Organization for Medical Physicists (IOMP). The speakers of all sessions were renowned in their respective fields. The moderator for the sessions were all medical physicists. In the interactive session of the 6th ELP, the group discussion allowed all the participants to clear their doubts. In the end, an assessment examination was conducted to evaluate the course's learning outcomes.

It was a great pleasure to be part of the 6th E-Learning Program. All sessions were highly intense and interactive. All participants showed a high degree of commitment and appreciated the efforts made by the SCMPCR team. I enjoyed being a part of the 6th ELP. I have learnt a lot and will try to improve myself. I want to thank Prof. Dr. Golam Abu Zakaria and Prof. Dr. Hasin Anupama Azhari for trusting me and providing me an opportunity to be a part of such a great platform. I would also like to thank the SCMPCR team, especially Mr Shemanto, for helping me in moderating the session. I look forward to being a part of the future also.

South Asia Centre for Medical Physics and Cancer Research (SCMPCR)
E-learning Program (ELP-06)
Clinical Medical Physics in Modern Radiotherapy

Panel of Speakers

- Elaine Thomas Matthews**
Medical Specialist
NHS
LAP Group Singapore
- Prof. Dr. Golam Abu Zakaria**
Professor of Clinical Engineering
Alo Bhubon Trust of Bangladesh
Karachi, Pakistan
- Dr. Florian Kamp**
Head of Radiotherapy
Department of Radiation Oncology
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University Hospital of Cologne, Germany
- Dr. Ing. Kristian Hesthelt**
Head of Medical Physics
Department of Radiation Therapy
University Hospital of Cologne, Germany
- Dr. Ing. Vukobrat Stilić**
Head of Physics
Department of Radiation Oncology
University Medical Centre
Maribor, Slovenia
- Prof. Dr. Anur Choudhary**
Dean and Chief Academic Officer
Sreechitra Kalyan Group of Institutions
Faculty of Dental and Health Sciences
Rajawade University of Health Sciences
(RUHS), India
- Prof. Dr. Suniti Datta Sharma**
Senior Officer (B & T)
Medical Physics Section
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All India Institute of Medical Sciences
New Delhi, India

Moderators

- Safayet Zaman**
Senior Medical Physicist
Bangladesh
- Nahida Sultana**
Medical Physicist
Bangladesh
- Jayashree Jain**
Medical Physicist
India
- Deepak Jha**
Senior Medical Physicist
Nepal
- Bushra Intakhab**
Medical Physicist
Pakistan
- Hasin Anupama Azhari**
PD Student (MPhil)
Sri Lanka

Accredited by IOMP
as CPD event for
Medical Physicists with
20 CPD

Event Details

- Date:** 04 July 2022 - 22 July 2022
- Time:** 2:30 PM (GMT) - 3:30 PM (GMT)
- Online Platform:** Zoom, Video Conferencing
- Registration Fees:**
 - Students: 10 USD
 - Professionals: 15 USD
 - International Students (South Asia): 5 USD
 - Students: 15 USD
 - Professionals: 20 USD
- Registration Link:** www.scmpcr.org/ELP06/RegistrationForm
- Payment Link:** www.cobase.academy/payment/1/



Rwanda Cancer Centre (RCC)

RANGIRA Laurent

Medical Physicist, Rwanda Cancer Centre, Under Rwanda Military Hospital (RMH)

The Government of Rwanda embarked on a journey to decrease the burden of disease through prevention, early detection, treatment, and care interventions. In 2016, the idea for a modern radiotherapy cancer centre, called Rwanda Cancer Centre (RCC), was established at Rwanda Military Hospital (RMH) in Kanombe as the first step in ultimately providing a full-service cancer centre. At the time, RMH already had advanced and existing cancer services in place and the human resource skills required to run the radiotherapy.

Constructed by UNTEC, a French company, and funded by the Government of Rwanda, the Global Fund, and the CDC: Centers for Disease Prevention, the Centre became operational in March 2019 and officially launched on 4 February 2020, in observance of World Cancer Day.

BUILDING CAPACITY

The newly completed radiotherapy unit has two linear accelerators using Volumetric Modulated Arc Therapy (VMAT), which directly administers radiation to cancerous tumors, and one CT scanner for treatment planning purposes. So far, almost 2000 patients have been treated, and of the almost 2000 treated patients, more than 67% have been covered by "Mutelle de Santé" while others have been privately funded. Depending on the number of hours we are putting in, we have the potential to treat 80-100 patients per day, per machine. Currently, the centre is averaging 60 patients per day with the capability to treat up to 150 patients per day at full capacity. We have 7 oncologists, 3 physicists and 7 radiotherapy technicians who work on both machines. In terms of expansion, even though it is called Rwanda Cancer Centre, it's important to point out that we are not a full-fledged cancer centre at the moment. Currently, we have radiotherapy and chemotherapy treatments, and the chemotherapy we are focusing on is the type that is given concurrently with radiotherapy.

This unit was the first step in eventually establishing a full-fledged cancer centre. The services I mentioned, people are currently getting from some of our private and other public referral hospitals, and in future plan, the center has an idea of having all the services offered at one site. It has been proven to be efficient

for patients because it reduces the time between diagnosis and treatment, and it reduces the cancer cases that are missed.

The facility will complement existing prevention, diagnosis, and treatment services, including a 20-bed chemotherapy unit already in operation. In addition, the centre will allow full scale-up of screening and early detection for cancers such as cervical, breast, and those related to hepatitis C virus.

Future plans indicate further diagnostic and inpatient services to be gradually added to provide comprehensive cancer treatment and palliative care to those with late-stage diagnoses. In addition, specialists are currently being trained to provide the necessary skill level, and staff are currently undergoing training with the support of the International Atomic Energy Agency (IAEA).

Previously, we had to send patients who would ordinarily benefit from this radiotherapy treatment abroad, and the cost was exorbitant. Depending on where we send patients, they would not get adequate treatment. The initiative started very early with the Ministry of Health, and we started by approaching the manufacturers. We wanted to acquire a solution instead of just buying equipment, which is expensive to buy in isolation and maintain. We also did not have the skills required to maintain and run such a centre, which is why we sought a solution.

The centre is equipped with two linear accelerators, one of the latest models in providing radiotherapy, and we have a CT scan dedicated to treatment planning. The treatment we give is precise, and we target the area of cancer that we want to treat and spare as much as we can the healthy tissue surrounding it. In order to achieve that, you need to use a planning CT scan. Using the images from the CT scan that you acquire, you can delineate the exact cancerous area, so to speak.

The modality of treatment we give is VMAT, Volumetric Modulated Arc Therapy. The machine will do a 360-degree around the patient and adjust and adapt the treatment field to the tumour size, allowing it to deliver efficient treatment with minimal side effects. Initially, where patients were seeking treatment, they were using a relatively old treatment modality, and one of the side effects was burning of the skin. Without going into the technical aspect, by



Figure 1: Elekta treatment machine

simply looking at the patients we are treating, it is easy to see their skin is not burned after treatment. It's a testimony to how advanced our treatment is by looking at the patients treated at our centre versus others with inferior technology.

In principle, radiotherapy can work alone or in combination with chemotherapy. It may also be used before or after surgery, and all that depends on the type of tumor, the stage, and whether it is part of a curative combination or part of alleviating one of the symptoms identified on a given patient. Thus, radiotherapy is used as a local treatment, and there is no patient first seen for radiotherapy treatment. The patient needs to first go through diagnosis, which is done in most of our referral hospitals and Butaro Cancer Centre.

Once the preliminary workup is completed, we then get the full stage and type of cancer. Often, several doctors sit together to decide the best treatment modality and sequence for each patient. This is done two ways, through multidisciplinary teams or tumor boards. Tumor boards are meetings to discuss the findings on a patient without having the patient directly in front of us. The sequence must be agreed upon, because the surgeon's role might impact what the radiotherapy will do, or the radiotherapy will have an impact on the type of surgery that will be done. At the moment, the doctors working at the centre take part in the decision-making process at other hospitals and on-site here. Therefore, they will have already identified the patient that will come to the centre for treatment and make arrangements before the patient comes.

The staff consists of three main levels;:

The first level is the doctor (oncologist) level, who sees the patient, decides on treatment modality, decides on the radiotherapy prescription, and uses planning tools to determine how the treatment should be conducted.

The second level is the physicist, who shows how the treatment will be implemented using the capacity and the physical aspect of the radiation beam. Most importantly, the physicist is involved in safety and quality assurance and ensuring the radiation is not harming the patient, the staff, and the public.

The third level is the radiotherapy technician, who will then put the patient on the machine based on the specificity and reference points set by the doctor and the physicist and execute the treatment.

Initially, when the centre started treatment in 2019, we had GE CT simulator, two Linacs Synergy models from Elekta, Octavius 4D with its detector for plan verification, Mosaic as treatment software and OnChronos software for patient data management and administration but unfortunately, we didn't own local TPS. Therefore, Elekta, which installed the two linacs, provides a virtual TPS (Pinnacle) and another contouring tool (ARTVIEW RTSS) for contouring. Because center had only one physicist, which was difficult to perform all the duties of the medical physicist, then center made a contract with the company's dosimetrists to do only planning for all our patients, and they do all plans in Pinnacle. This means all patients, after being contoured by our oncologists, we send the structures to those dosimetrists in Europe (i.e., they have remote access to all our systems) and make plans. Then after, they send back finished plans, and we do plan verification. When the plans meet all criteria during verification, we go ahead with treatment. This is how things have been historically being done since the centre was inaugurated until now.

Later, the centre bought its own TPS (Monaco Version 5.51.10), and all commissioning procedures were successfully completed. The TPS is functioning well, and doctors currently use our own TPS for contouring. Then contoured structures are still sent outside for planning, but we are trying our best to learn how to make our plans in Monaco TPS. Therefore, we can do it ourselves at our centres.

Congratulations ! Prof. Dr. Avinav Bharti



We Congratulate Dr. Avinav Bharti from Dr. Ram Manohar Lohia Institute of Medical Sciences Vibhuti Khand, Gomti Nagar, Lucknow on his promotion to Associate Professor. He is currently working in DrRMLIMS, Lucknow as Associate Professor (Medical Physics in Radiation Oncology) since July 2021. He received his initial training as Senior Demonstrator (Medical Physics) for 3.5 years at AIIMS, New Delhi. After completing his post graduation in Physics from BHU, Varanasi he did PhD in Medical Physics from AIIMS, New Delhi. He has experience of working in advanced state of art technology enabled departments as a Medical Physicist.

He has publications in national and international journals as first and corresponding author. He has also been contributing author to other publications. He is reviewer for some national as well as international journals. He has made oral and poster presentations in national and international conferences and been awarded best paper and poster at national and regional conferences of AMPI.

Radiation Oncology Facilities in Sri Lanka

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Sri Lanka, officially named the "Democratic Socialist Republic of Sri Lanka", formally Ceylon, is an island nation in the Indian ocean. Sri Lanka is a lower middle-income country with a total population of 21.4 million. Nine provinces have the first level of administrative division. The Sri Lankan health policy started in 1951 and covered all citizens. The health system is publicly funded, and its facilities are freely accessible to all Sri Lankans. Cancer is the second leading cause of death worldwide and in Sri Lanka. In Sri Lanka, 29604 new cancer cases and 16691 deaths have been reported in 2020 [1]. The most common cancer is lip/oral cavity in men and breast cancer in women. Due to the usage of tobacco in both ways of smoked (cigarettes, beedi and cigars) and smokeless tobacco (chewing and snuffing), the lip/oral cavity cancer incidence rate is high in men [2]. The five most frequent cancers in males and females are shown in figures 1 and 2. The increasing number of cancer incidences has become a challenging task in Sri Lanka (figure 3).

Cancer treatment can comprise several treatment modalities such as surgery, radiotherapy, chemotherapy, immune therapy, hormonal therapy and palliative care. About 50% of cancer

patients receive radiotherapy during the course of their treatment. The first cancer institute of Sri Lanka, the National Cancer Institute-Maharagama, currently known as Apeksha Hospital, was established in 1958. Initially, it was equipped with three Deep x-ray machines, a cobalt-60 Junior Theratron and two superficial x-ray machines. The patients who were suspected or diagnosed with cancer were referred to this hospital from all nine provinces of Sri Lanka. Later, it was facilitated with 3-Deep x-ray therapy machines and two cobalt teletherapy machines. Currently, it consists of 5 linear accelerators, 3- cobalt teletherapy, and 1-high dose rate brachytherapy.

In order to avoid inconvenience to the patients and a long waiting list for treatment, the Department of Health decided to decentralize the radiotherapy facilities in Sri Lanka. As a result of that, seven government hospitals have radiotherapy facilities currently. In addition, two private sectors provide radiotherapy facilities [4,5] (figure 4).

At present, there are eight linear accelerators (linacs), nine cobalt teletherapy and two high dose rate (HDR) brachytherapy units functioning at government hospitals in Sri Lanka. Moreover, two private sectors provide radiotherapy facilities [4]. The details of radiotherapy facilities in Sri Lanka are shown in table 1. Currently, only seven provinces out of nine provinces consist of radiotherapy facilities. The government of Sri Lanka has approved purchasing four more linacs, but it has not been purchased yet due to the economic crisis in Sri Lanka. If this government project is completed, all Sri Lankan provinces will have radiotherapy facilities.

International Atomic Energy Agency (IAEA) recommends an ideal ratio of 4-8 radiotherapy centres per 1 million people or one

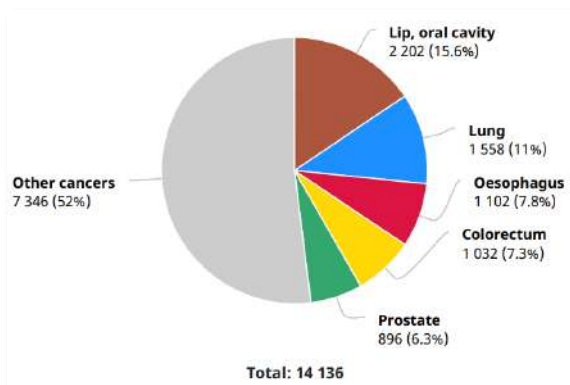


Figure 1: Number of new cases in 2020, males, all ages. Source: [1]

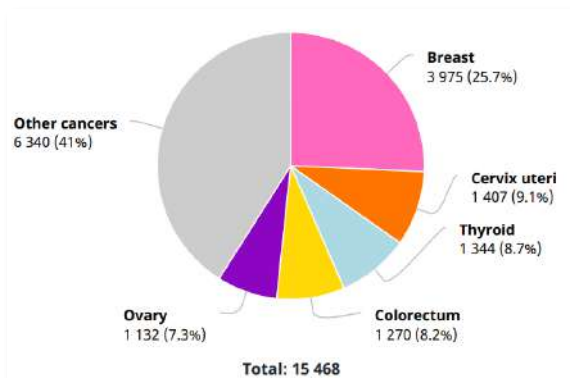


Figure 2: Number of new cases in 2020, females, all ages. Source: [1]

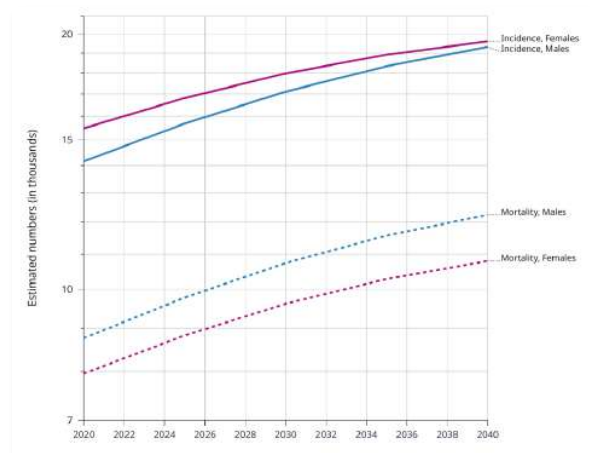


Figure 3: Estimated numbers of cancer incidence and mortality in females and males in Sri Lanka from 2020 to 2040. Source: [3].

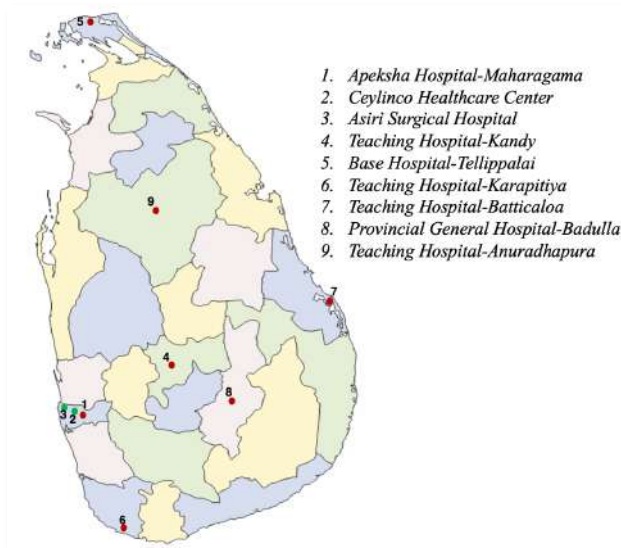


Figure 4: Cancer treatment centers in Sri Lanka. The red circles represent government hospitals and the green circles represent private sectors.

megavoltage machine (MVM) per 250,000 people [7]. There are 20 MVMs available for 21.4 million people in Sri Lanka. It provides 0.93 MVMs per one million people. Two linacs have been installed at Teaching Hospital-Kandy, but treatment has not started yet. If the treatment starts, there will be 1.02 MVMs per one million population. It is far behind the IAEA benchmark recommendations. Achieving the IAEA recommendations in low-income countries is impossible, but it is important to install more

MVMs in order to tackle the increasing number of cancer patients.

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Table 1: Radiotherapy facilities in Sri Lanka. * indicates installation has occurred but treatment has not started yet. ** indicates private sector. Source: [4,6].

Province	Population	Hospital	Radiotherapy facilities
Western	6,219,000	Apeksha Hospital-Maharagama	Linac-5 Cobalt-3 HDR-1
		**Ceylinco Healthcare Care Center	Tomotherapy-1 Linac-1 HDR-1
		**Asiri Surgical Hospital	Linac-1
Central	2,811,000	Teaching Hospital-Kandy	*Linac-2 Cobalt-2 HDR-1
Northern	1,061,315	Base Hospital-Tellippalai	Linac-1 Cobalt-1
Southern	2,696,000	Teaching Hospital-Karapitiya	Linac-1 Cobalt-1
Eastern	1,783,000	Teaching Hospital-Batticaloa	Linac-1
Uva	1,400,000	Provincial General Hospital-Badulla	Cobalt-1
North Central	1,402,000	Teaching Hospital-Anuradhapura	Cobalt-1
North Western	2,592,000	-	-
Sabaragamuwa	2,088,000	-	-

Flattening Filter vs. Flattening Filter Free Photon Beam for Esophageal Carcinoma with IMRT Technique: Evaluation of Treatment Plan Quality

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Introduction:

Oesophageal cancer (Ca-esophagus) is a deadly disease that presents therapeutic challenges to multidisciplinary oncology. In such cases, chemo-radiation becomes the primary treatment option for Ca-esophagus. To capitalise on the therapeutic potential of sparing normal organs, radiotherapy for Ca-esophagus has shifted from 3-dimensional Conformal Radiation Therapy (3D-CRT) to intensity-modulated radiation therapy (IMRT). The benefits of IMRT include improved dose conformity and a steeper dose gradient beyond the target structure. The limitation of IMRT is that it delivers more MU than 3DCRT, which increases the gantry head leakage dose, leading to a higher low dose to normal tissues and the entire body. In recent years, there has been much interest in using flattening-filter-free (FFF) photon beams. The FFF beam has a higher dose rate, less dosage to the OAR, and less neutron contamination with high energy beams (>15 MV) than the flattened beam. As a result, using the FFF beam for therapeutic purposes will result in a shorter treatment period and a lower risk of radiation-induced secondary cancer.

The current study aimed to compare the efficacy of treatment plans with FF and FFF photon beams for Ca-esophagus using the IMRT technique. We used dose-volume indices for the target and OAR, Monitor Unit, Beam on Time, and Integral dose (ID) in the analysis to compare the efficacy of the FFF photon beam to generate a clinically acceptable and desirable plan versus the FF photon beam.

Materials and Method:

Our study included 12 Ca-esophagus patients from our institute's database. These patients have previously received IMRT (6 MV FF photon beam) treatment at our facility on a Varian Medical Systems TrueBeam linear accelerator (Linac) with Millennium 120 Multi-leaf Collimator (MLC). For all patients, CT images (2.5 mm slice) were taken on a Siemens CT simulator in a supine position with the arm extended above the head. Using the RTOG 0436 protocols, a physician determined the gross tumour volume (GTV), clinical target volume (CTV), planned target volume (PTV), and respective OARs (spinal cord, lung, and heart).

The IMRT treatment plans were generated using 9 evenly spaced coplanar beam angles of 40° along with 0° collimator settings, the maximum dose rate of 600 MU/min (FF photon beam) and 1400 MU/min (FFF photon beam). Because the patient had previously been treated with a 6MV FF flattened photon beam, each patient was re-planned retrospectively with a 6 MV FFF photon beam that uses the same dose, dose constraints, and inverse optimisation parameter. The treatment plans were generated with the Eclipse Treatment Planning System (Version 13.7.29, Varian Medical System), and the dose was calculated with the Anisotropic Analytical Algorithm (AAA). The photon optimiser (PO) (Version 13.7.29, Varian Medical System) has been utilised for inverse optimisation.

Results:

Conformity Index (CI) values for 6 MV_FF and 6 MV_FFF IMRT plans were 0.990 ± 0.012 and 0.989 ± 0.013 , respectively. Homogeneity Index (HI) value for 6 MV_FF and 6 MV_FFF plans were 1.014 ± 0.007 and 1.015 ± 0.004 ($p > 0.05$) respectively. Spinal Cord receives an average maximum dose of 37.97 ± 4.89 Gy and 34.24 ± 4.60 Gy in 6 MV_FF and 6 MV_FFF IMRT plans. V20 Gy for lungs was $24.96 \pm 9.65\%$ in 6 MV_FF plans, and for 6 MV_FFF plans, it was $22.08 \pm 8.65\%$ ($P > 0.05$). Lungs were recorded with a mean dose of 15.00 ± 2.94 Gy and 12.62 ± 2.53 Gy in 6 MV_FF and 6 MV_FFF IMRT plans, respectively ($p > 0.05$). The mean dose to the heart was 20.87 ± 7.95 Gy and 18.52 ± 7.02 Gy in 6 MV_FF and 6 MV_FFF IMRT plans ($p > 0.05$), respectively. V20% of

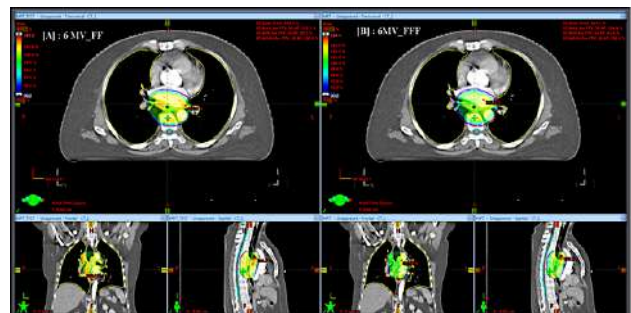


Figure 1: Shows the colour dose washes of (A) 6 MV_FF_IMRT and (B) 6 MV_FFF_IMRT for one of the ca-oesophageal cancer patient.

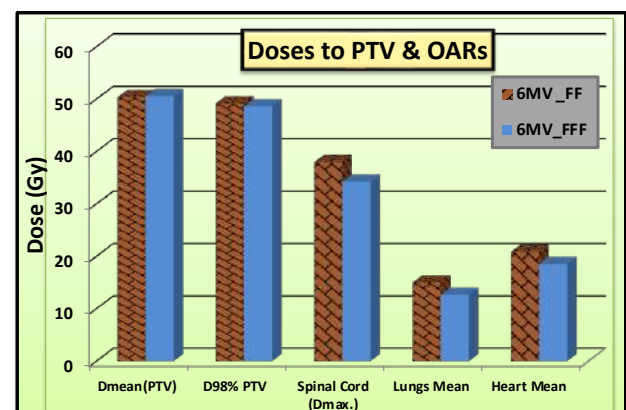


Figure 2: Shows comparison of the doses received by PTV and OARs.

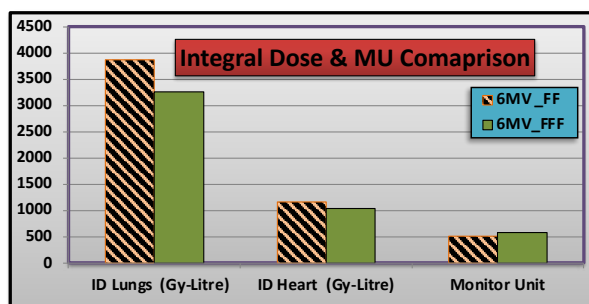


Figure 3: Illustrates the integral doses (ID) to OARs and Monitor Unit (MUs) received in

heart was $46.46 \pm 22.86\%$ and $40.51 \pm 20.20\%$ in 6 MV_FF and 6 MV_FFF IMRT plans ($p > 0.05$) respectively. ID for lung was 3863.29 ± 1141.22 (Gy-L) and 3263.99 ± 1011.79 (Gy-L) in 6 MV_FF and 6 MV_FFF respectively ($p > 0.05$). ID for heart was 1163.8 ± 504.62 (Gy-L) and 1033.34 ± 451.13 (Gy-L) in 6 MV_FF and 6 MV_FFF respectively ($p > 0.05$). The monitor unit in the case of 6 MV_FF was 507.04 ± 106.49 , and for 6 MV_FFF IMRT plans it was 580.01 ± 105.71 ($P > 0.05$). Beam on time for the 6 MV_FF plan was 0.845 ± 0.18 min., and the same for 6 MV_FFF was 0.414 ± 0.08 min. ($p < 0.05$).

Discussion:

A comparison of the IMRT plans using FFF, and FF photon beams revealed no significant differences in PTV coverage between them. 6 MV FF IMRT plan CI was higher by 4.4% than the 6 MV FFF IMRT plan. HI, the value for 6 MV_FF was insignificantly better than 6 MV_FFF IMRT plans. Plan 6 MV FFF IMRT had a 9.8% lower dose to the spinal cord than plan 6

MV FF IMRT. Oesophageal cancer treatment can cause substantial pulmonary damage. The average values of V5Gy, V10Gy, and V20Gy of lungs were lower in 6 MV FFF IMRT plans compared to 6 MV FF IMRT plans by 2.56 %, 7.4%, and 11.53%, respectively. In 6 MV FFF plans, the mean dose received by the whole lung was 15.90% lower than in 6 MV FF plans. Radiation-induced heart damage is noticeable when the heart receives more than 40 Gy, and reducing V40Gy is critical to reducing heart toxicity. Compared to FF beam plans, V40Gy was 9.16% lower in FFF beam plans. To compare V20Gy with FF beam plan, the difference was 11.87%. FFF beam plan got a 20% lower average mean dosage to the heart than the FF beam plan.

The integral dose is the absorbed dose inside the organ of interest. As a result, the ID for the heart was 11.21% lower in individuals treated with FFF beam than those treated with FF photon beam. According to the results, there was a 14.39% greater MU in the FFF beam plan than the FF beam plan. The increased number of MUs mainly produced a homogenous dose distribution, and the FFF beam shape must be compensated for by a greater number of tiny segments and MUs. The 6 MV FFF IMRT plan has a 50.97% lower BOT than the FF beam plan. This was only achievable because the FFF beam can give a larger dose in a shorter time.

Conclusion: The study has shown that FFF photon beams give a clinically desirable and physically acceptable treatment plan compared to FF. Target coverage did not change significantly between the FF and FFF plans for Ca-esophagus. FFF photon beam patients had better OARS sparing. This will improve the quality of life for patients with a short life expectancy and ensure a smooth treatment course. Decreased total treatment duration has aided in reducing patients' in-room time while also helping motion management. Less scattering dose in FFF reduces the integral dose by a factor of two. Finally, we can conclude that the FFF photon beam can be used dosimetrically for Ca-esophagus treatment planning.



4th National Symposium on International Day of Medical Physics- by Mishkat Ali Jaffery

Each year the Pakistan Organization of Medical Physics (POMP) celebrates International Day of Medical Physics (IDMP). 4th National Symposium on IDMP was celebrated on 6th November 2021, at Jinnah Postgraduate Medical College (JPMC), Karachi-Pakistan. The Objective was to celebrate international day of medical physics by sharing knowledge through interactive sessions and to recognize exceptional service and achievements in the profession. Tribute was given to Mohsin-e-Pakistan "Dr. Abdul Qadeer Khan", Pakistani nuclear scientist. Participants appreciated the efforts of the organization committee. Response from presenters were outstanding. At the end of the session shield awards were distributed among presenters and cash prizes and certificates was given to the best posters to motivate and promote the participation.

Dosimetric Impact of Carbon Fiber Couch Top: A Phantom Study

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Background:

With the availability of modern and sophisticated treatment modalities like intensity-modulated radiotherapy (IMRT), volumetric modulated arc therapy (VMAT) and stereotactic body radiotherapy (SBRT), a significant portion of the target dose is delivered posteriorly through the couch top, creating dose perturbations such as attenuation, increased skin dose, and target coverage effects. Based on theoretical radiobiology considerations, the dose delivery accuracy should be within 3% - 5% for increasing the therapeutic index [12]. The effects of the beam attenuation by the couch are often neglected in the planning process as modern couch tops are assumed to have low specific density and radiolucent so that they will have minimal impact. Several publications have highlighted the negative effect carbon fiber couch tops can have on patient planning when the couch top is not accounted for in the treatment planning system (TPS) [3]. It shows a significant increase in surface dose, reduced tumor dose, and altered dose distribution when beams first transit carbon fiber couch tops at either normal or oblique incidence [3]. The magnitude of dose perturbation due to carbon fiber couch top is a function of beam energy, relative geometry of the beam and devices, the fraction of dose delivered through these devices, and their physical composition [3,4]. This study investigated the dose error of 4-MV, 6-MV, and 15-MV photon beams by an Elekta carbon fiber couch (iBEAM evo).

Materials and Methods:

a) Attenuation measurements:

Dependency on Oblique Beams & Field size: All measurements were performed on an Elekta Synergy Platform linear accelerator at Kathmandu Cancer Center, Bhaktapur, Nepal. The treatment unit couch top (iBEAM® evo) is an indexed patient positioning system constructed with a homogenous carbon fiber sandwich design containing no metal in the treatment area.

This study examined the attenuation of photon beams traversing obliquely through the carbon fiber treatment couch top. Dose reduction by attenuation of the beam was measured in phantom under various conditions for 4-MV, 6-MV, and 15-MV photon beams. Attenuation measurements were made in virtual water phantom (30×30 cm²) using an IBA Farmer type ionization chamber (FC65-G) and IBA Dose1 electrometer. The chamber was placed at the center of the virtual water phantom and positioned so that the center of the chamber was at the linear accelerator's isocenter. A source to axis distance (SAD) of 100 cm was used for all 4, 6, and 10-MV, and field sizes used included 10×10 cm². Measurements were taken at 10° intervals from 110°-180°, and the attenuation due to the couch was calculated by the ratio of the measurements taken under the two conditions measured with the couch in the path of the beam to the charge measured with the couch out of the beam's path. Attenuation due to the couch is also measured for the possible dependency on field size.

Dependency on longitudinal Position: Dose perturbation due to the couch top may vary if the position of the patient relative to the couch top varies. To investigate the longitudinal dependence of the beam

attenuation, the same experimental setup was shifted along the longitudinal axis of the treatment couch in increments of 25 cm.

b) Surface dose measurements:

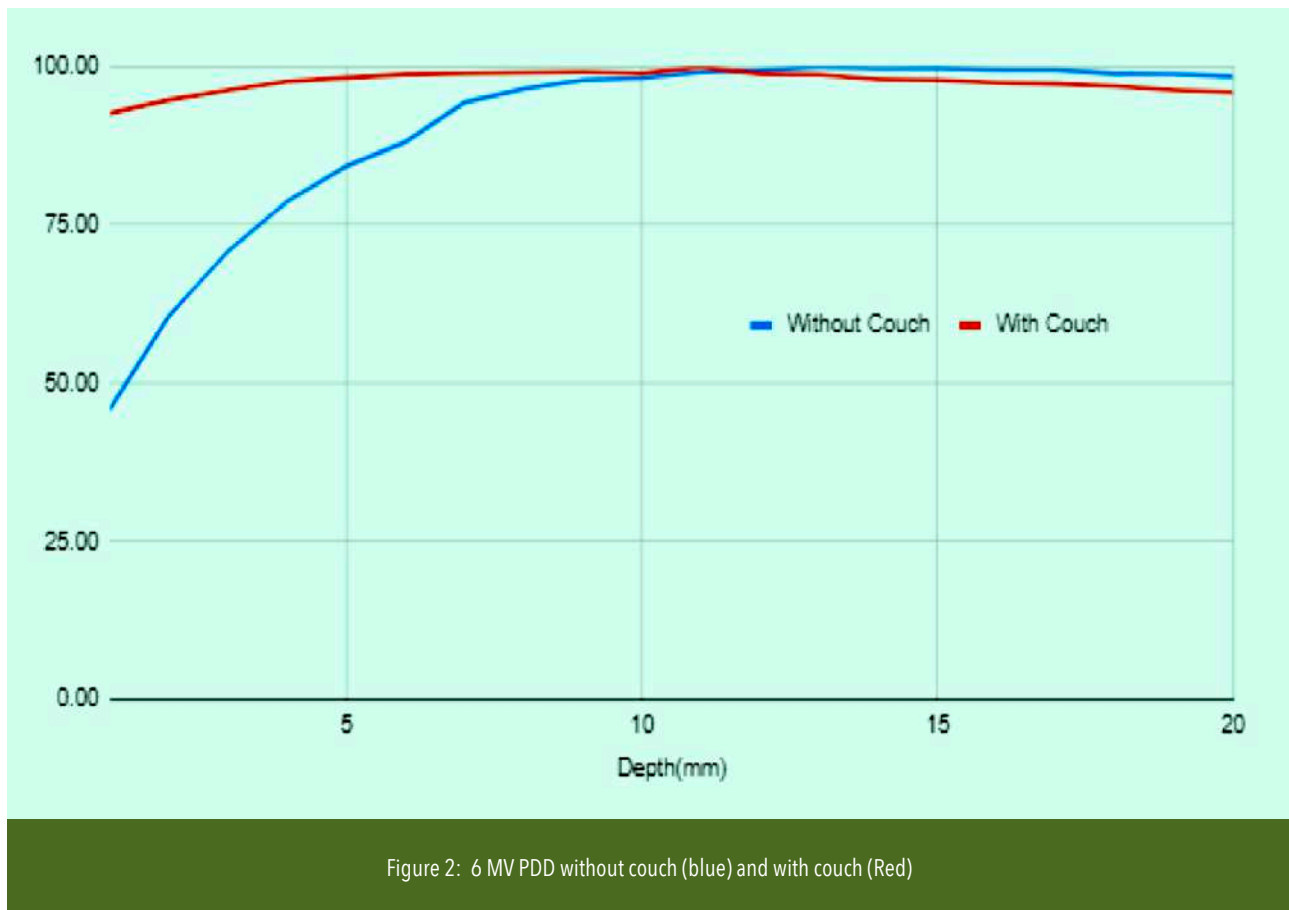
All PDD measurements (up to 3 cm) were made in 30×30 cm² slabs of virtual water phantom using a parallel-plate ionization chamber with an IBA Dose1 electrometer. The central axis of the beam was normal to both the couch and phantom surface, and percentage depth dose (PDD) measurements were made at a source to surface distance (SSD) of 100 cm for all available photon energies 4, 6 and 15-MV and a field size of 10×10 cm². The entry window of the parallel plate ion chamber was directed toward the source. The PDD curves were created with and without a carbon fiber couch.

Results and Discussion:

We observed that neglecting the attenuation of oblique treatment fields by the carbon fiber couch can result in localized dose reduction from 0.3% to 5%, depending on energy, field size, and geometry. Our results are in line with several other reports, which showed that couch attenuation can increase up to 4 times as the beam angle ranges from



Figure 1: The experimental setup for in-phantom measurement



110°-180° [3,4,5]. Maximum attenuation of about 4.6% for 4 MV was observed at a gantry angle of 120°. Our measurements showed about a 2.3% compared to 1.4% attenuation for 6 MV for 5×5 cm² vs. 20×20 cm². As expected, attenuation increases with decreasing photon energy, increasing the angle of incidence to the couch, and to a lesser extent, decreasing field size [3,4,5].

The variation in attenuation moving longitudinally along the couch has been explored. It can be seen that the attenuation varies by ±2.03% along the entire region investigated. In order to maintain similar dose distribution after considering couch in the planning process, patients should be positioned reproducibly by methods such as indexing [4,5].

Skin dose is influenced by both energy and field size. The surface dose is increased remarkably from about 58%–99% for 4 MV, 45%–93% for 6 MV, and 31%–78% for 15 MV for a 10×10 cm² field with and without the carbon fiber couch top. Dmax also shifted upward to 2–6 mm while accounting couch depended on photon energies. The results showed that the carbon fiber couch increased surface dose during posterior irradiation. Devices close to the patient act like bolus, increasing the skin dose and shifting the depth dose curve toward the patient's surface [6,7]. Therefore, the skin-sparing effect of the high-energy beams was decreased. If the effect of the couch is not considered, it may cause significant differences in skin dose, leading to clinically relevant skin toxicity [7].

Conclusion:

This study investigated the dose error resulting from neglecting the beam attenuation by a carbon fiber treatment couch. It was found that not considering the couch attenuation could result in clinically significant underdose to the tumor and increased skin dose. The TPS commissioning is done with percentage depth doses acquired at 0°

gantry angle and does not consider the attenuation due to the couch top. Therefore, treatment tabletop should be incorporated into the patient model during the treatment planning dose calculations process to enhance the dose calculation accuracy and to maximize radiotherapy outcomes.

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SCMPCR Condolence message: Prof. Dr. Wolfgang Schlegel

Prof. Dr. Wolfgang Schlegel passed away on June 30, 2022, at 77 years old. He was born in 1945 in Hartenstein / Erzgebirge, Germany. From 1965-1970 he studied physics and mathematics in Berlin and Heidelberg: Diploma (1970), Ph. D. (1972) in physics and habilitation in medical physics (1978) at the University of Heidelberg. He built up the medical physics department at the DKFZ (German Cancer Research Centre) in Heidelberg and took on a professorship (head) for medical physics until his retirement in 2019. Professor Schlegel was one of the leading physicists in Germany and the inventor of many new techniques, including IMRT in medical physics. He published more than 200 original papers and five textbooks in medical physics. He served different functions in many national and international organisations, including the European Federation of Organizations in Medical Physics (EFOMP) president for six years.



Teacher/student collaboration between University Heidelberg and the Gono University Dhaka in June 2002. That was the historical contribution of Germany to the development of medical physics in Bangladesh (Prof Schlegel in 3rd from left)



At the Farewell Ceremony of Professor Wolfgang Schlegel on the 31st May 2019, Prof Zakaria was invited and delivered a talk on South Asia Centre for Medical Physics and Cancer Research (SCMPCR). Professor Schlegel with his wife, Professor Jaekel and Prof. Zakaria

Professor Schlegel was a mentor and good colleague of SCMPCR founder Professor Zakaria. They have known each other since 1980 till his death. Prof. Schlegel played a significant role in developing medical physics in Bangladesh. Prof. Schlegel and Prof Bille worked hard with Prof. Zakaria to establish teacher/student collaboration between the University Heidelberg and the Gono University Dhaka under the financial support of the German Academic Exchange Program (DAAD) from 2002. As a result, teachers, students, and young physicists from Bangladesh received training in Germany to work as medical physicists in Bangladesh. Since 2018, this collaboration has been expanded to include medical physicists across South Asia.

The entire team of SCMPCR expressed deepest condolences and heartfelt sympathies on the death of Prof. Dr. Wolfgang Schlegel. We have lost an outstanding medical physicist, friend, and supporter. We wish for the eternal peace of his departed soul.



Establishment of a state-of-the-art cancer care center in the port city of Bangladesh - An Evercare initiative



Dr. Md Akhtaruzzaman

Currently working as a Chief Medical Physicist at the Evercare Hospital Chattogram, Bangladesh. He has been pursuing as an adjunct post-doctoral research fellow at the University of Western Australia. He is the president of Bangladesh Medical Physics Society (BMPS). He is also a member of the Science Committee of Asia-Oceania Federation of Organizations for Medical Physics (AFOMP).



Cancer affects people in all countries regardless of age, gender or socioeconomic conditions. According to World Health Organization (WHO), it is estimated that the global cancer burden will increase from 12.7 million new cases per year in 2008 to 21.4 million per year by 2030, with nearly two-thirds of all cancer diagnoses occurring in low- and middle-income countries. Regarding the global context, about 24.59% of the population is present in South Asia, and the burden of cancer death is 68.85%. As far as cancer in the South Asia region is concerned, the incidence of new cases is 10.23%, and the burden of cancer deaths as compared to the incidence is 68.44% of the world's cases. This well-known fact indicates that this region of the world requires improving its strategies in cancer management.

According to WHO's updated estimation, the number of cancer patients is increasing daily; there are over 1.5 million cancer patients in Bangladesh. It also says 200,000 people are attacked by cancer every year, and 150,000 people die of the disease. The Cancer Awareness Foundation of Bangladesh says the country currently has 37 cancer treatment facilities, which is highly inadequate, and unfortunately, most of them are situated in Dhaka.

Although there are a few chemotherapy facilities available in Chattogram, unfortunately, there is no comprehensive cancer care center with modern radiotherapy treatment facilities in



Radiation Oncology Department-EHC

Chattogram except for a single cobalt teletherapy and brachytherapy machine serving the patient in a government hospital. Therefore, it is a burning need to establish a specialized cancer center in the port city Chattogram. One good news is that "EVERCARE HOSPITAL CHATTOGRAM (EHC)" has taken the initiative to set up an international-standard cancer center, which will be launched in mid-August of this year. However, the chemotherapy and diagnostic facilities are already available at the EHC.

The radiation oncology department will be well equipped and governed by skilled expertise from home and abroad. It will have the latest VersaHD linear accelerator with respiratory gating, CBCT, 6D treatment couch, hi-tech dosimetry systems, and immobilization devices. The department will offer all advanced treatment techniques, including SRT and SBRT. This Cancer Center aims to focus on providing quality treatment at an affordable cost.



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Brandenburg University of Applied Sciences
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Intended Audience (National and International)
Students (CSE, EEE, BME), Radiographers, Medical Physicists, Scientists,

Mohammad Ullah Shemanto
South Asia Centre of Medical Physics and Cancer Research (SCMPCR), Dhaka, Bangladesh

Information Technology has pervaded many aspects of human life, and the impact of this innovation in healthcare and medical science has been evident in recent years. Digital image processing has grown in importance in health care due to the increased use of direct digital imaging technologies. In addition to digital technologies like computed tomography (CT) or magnetic resonance imaging (MRI), previously analogue

imaging modalities like endoscopy or radiography now have digital sensors.

Digital images are composed of individual pixels, where discrete brightness or color values are assigned. Using appropriate communication networks and protocols, such as picture archiving and communication systems (PACS) and the digital imaging and communications in medicine (DICOM) protocol, can be efficiently processed, objectively evaluated, and made available in multiple locations at the same time.

Medical image processing has grown in importance as a prominent field in engineering sciences and radiology. Applied mathematics, computer science, engineering, statistics, physics, biology, and medicine have all been incorporated into this field. The knowledge and skills that are required for medical image processing are not well recognised by the personnel in this field, even though medical imaging is gaining importance. It is crucial to know how to process and analyse a large number of images in order to get high-quality information for disease diagnosis and therapy. Considering this fact, Alo Bhubon Trust, in collaboration with the Centre for Biomedical Science and Engineering, United International University (UIU) and Brandenburg University of Applied Sciences, Germany, organised an online three-month certificate course from 27 August 2021 to 19 November 2021.

This course aimed to help students develop skills in computational radiology, radiological image analysis, and biomedical image processing. This course introduced the basic concepts and techniques for medical image processing and promotes interest in further study and research in medical

Course Curriculum

Introduction (Structure of images, image types, programming environments (Matlab/Octave, Python))

Image Enhancement

Segmentation Part I

Segmentation Part II

Segmentation Part III

Feature Extraction & Classification

Image Registration

Color Image Processing

Hyperspectral Image Processing

DICOM

Medical Image Sources

Medical Image Sources

Applied Medical Image Processing

imaging processing. It has guided the participants to do research work in this area and state-of-the-art techniques.

This course covered the core steps of image processing and gives an overview of medical image formation, enhancement, segmentation, analysis, visualisation, and communication with many examples from medical applications. It started with a brief introduction to medical imaging modalities and acquisition systems. As a focus, image enhancement techniques, segmentation, registration, texture analysis, DICOM and their application in diagnostic imaging were discussed. The storage, retrieval, and communication of medical images were also introduced to complete this overview.

The speaker of the course was Prof. Dr. med. Thomas Schrader is a Pathologist & Computer Scientist in the Department of Informatics and Media at the Brandenburg University of Applied Sciences, Brandenburg, Germany. Since 2009, Prof. Schrader is a Professor of Applied Informatics focusing on medical informatics at the Brandenburg University of Technology. He teaches telemedicine, eHealth, computer-assisted medicine, digital

signal and image processing, and assistance systems. His research focuses on data quality in medical data repositories, prospective risk analysis in medical environments, motion analysis, and e-Health. Prof. Schrader organised the whole course in a user-friendly manner for the participants. He provided all the related study materials, software, image library for practice, recorded lectures, and live interactive classes. Padlet is an educational technology that provides a cloud-based software-as-a-service, hosting a real-time collaborative web platform where users can upload, organise, and share content to virtual bulletin boards called "padlets". All the materials were uploaded regularly on the padlet.

The response to the program was overwhelmingly positive. Initially, we determined that the course would be limited to 30 people. However, in response to the request, the number of participants was expanded to 35. The participants from 11 countries attended the course, where most attendees were from Bangladesh, representing several disciplines in the healthcare and engineering fields.



Kingston Medical Physics Award of Excellence 2020

We are glad to share the news that Mr Vysakh R (Medical Physicist - C, Department of Radiation Oncology, Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Tata Memorial Hospital, Mumbai, India) and Mr Kishore Joshy (Medical Physicist- D, Department of Radiation Oncology, Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Tata Memorial Hospital, Mumbai, India) have received the Kingston Medical Physics award of excellence for securing first and second positions in the College of Medical Physics of India (CMPI) certification exam - 2020. The certificate and cash prize were awarded during Bangalore's Association of Medical Physicists of India (AMPI) annual conference. Mr. Vysakh holds a Post M.Sc Diploma in Radiological Physics from Homi Bhabha National Institute, Mumbai and Radiation safety officer level 3 from AERB. He is a member of the College of Medical Physics in India and a lifetime member of the Association of Medical Physicists of India (AMPI). He has published three research articles and presented four conference presentations. In March 2022, his poster was awarded as the best poster at the annual conference of the Northern Chapter Association of Medical Physicists of India. Mr. Kishore Joshi has completed his diploma in Radiological Physics (Dip. RP). His experience in the field of Radiation therapy is around seven years, and his profile is related to dosimetry, QA, calibration, commissioning of radiation delivery devices such as linear accelerators, CT simulators and treatment planning of external beam radiation therapy and brachytherapy. He has contributed to 4 research papers.



Bangladesh Medical Physics Society (BMPS): Annual General Meeting 2021

Md. Jobairul Islam^{1,2}, Md. Shahidul Miah^{1,3}, Dr. Md Akhtaruzzaman^{1,4}

¹Bangladesh Medical Physics Society (BMPS), ²Labaid Cancer Hospital and Super Speciality Center, Dhaka, Bangladesh, ³Rajshahi Medical College & Hospital, Rajshahi, Bangladesh, ⁴Evercare Hospital Chattogram, Chattogram Bangladesh.

BMPS is a registered organisation, a non-profitable and professional body working for the development of medical physics in Bangladesh since 2009. It represents the interests of medical physicists globally and creates education and training possibilities for the rising scientific generation. BMPS has a long list of achievements arranging national and international conferences, seminars, workshops and training programs each year in the field of Medical Physics. Moreover, BMPS has hosted International Medical Physics Certification Board (IMPCB) exams two times (2018 & 2021) in Bangladesh.

The 21st Asia Oceania Congress of Medical Physics (AOCMP-2021), an official congress of the Asia-Oceania Federation of Organizations for Medical Physics (AFOMP) hosted by the Bangladesh Medical Physics Society (BMPS) at the United International University (UIU), Dhaka, Bangladesh from 10-12 December 2021. The congress was endorsed by the International Organization for Medical Physics (IOMP), the Middle East Federation of Medical Physics (MEFOMP) and the European Federation of Organizations for Medical Physics (EFOMP). This was the first time the AFOMP congress was held in Bangladesh.

The Bangladesh Medical Physics Society (BMPS) annual general meeting was held on 10 December 2021 after the scientific session of AOCMP-2021. Initially, Mr. Md Jobairul Islam, Joint Secretary (2019-2021), presented previous terms reports and activities. Also, Treasurer presented the 2019-2021 terms treasurer report. Md. Anwarul Islam, President and Dr. Md. Akhtaruzzaman, Secretary, discussed the activities and related issues of the last year. Founder President Prof. Dr. Hasin Anupama Azhari delivered her valuable speech for society. Also, executive committee (EC) Members and general members

expressed the future activities and their implementation in AGM. General members unanimously accepted some new proposals from EC.

Dr. Zakaria was awarded Lifetime Achievement Award for his outstanding contributions to the Bangladesh Medical Physics



Prof. Dr. Zakaria received lifetime achievement award from Dr. Akhtaruzzaman and Mr Anwarul Islam



New Executive Committee Member:2021-2023

field over the last three decades by BMPS. He is considered the father of medical physics in Bangladesh. Dr. Akhtaruzzaman was awarded an honorary memento for achieving his PhD degree in January 2020 from Maria Sklodowska-Curie National Research Institute of Oncology, Warsaw, Poland.

The last stage of the meeting involved the preparation of the executive committee for the 2021-2023 sessions of BMPS under the guidance of the respected advisory member Prof. Dr. Golam Abu Zakaria. He announced the names of the executive committee members for the 2021-2023 terms after evaluating the application form of Ex-COM 2021-2023. All of the general members accepted this name for the following EX-COM terms. Due to that, this new EX-COM were unanimously accepted by general members. Dr. Md. Akhtaruzzaman and Mr. Md. Jobairul Islam were elected President and Secretary for the following terms. Ms. Sadia Afrin Sarah was elected again as Treasurer. Mr. Md. Mostafizur and Mr. Md. Sajjan Hossain as Vice-Presidents, and Mr. Md. Shahidul Miah was elected as Joint secretary. Capt. Md. Khairul Islam, Md. Nazmul Islam, Mst. Zinat Rehana, Md. Mokhlesur Rahman, Polash Sarker, and Rukaiya Akter were selected as executive members. After the formation of the new committees, President and Secretary sought the cooperation of all in moving ahead.



Dr. Akhtaruzzaman received an honorary memento for achieving his PhD degree from Prof. Dr. Hasin Anupama Azhari

Congratulations ! Dr. Teerthraj Verma

It gives us pleasure to share that Dr. Teerthraj Verma (Additional Professor (Medical Physics) Department of Radiotherapy, King George's Medical University, UP) have been granted an extramural project entitled "Study of LASER based cost-effective monitoring system for lung & breast cancer radiotherapy: Development of patient specific quality assurance technique" in Grants-in-Aid Scheme Department of Health Research ICMR, MoHFW, Government of India. Duration of the project is 3 years. The funding includes salary for a Junior Research Fellow position and equipment purchases.



“Prof Chougule is serving as the Dean and Chief Academic Officer, Swasthya Kalyan Group, Jaipur, after completing 38 years of long exemplary career as a medical physics teacher, researcher, mentor and leader in the Department of Medical Education, Government of Rajasthan State, India. He is President of AFOMP, Chair of Education and Training Committee IOMP, and Chairman of the IOMP accreditation board. He is also a member of the IMPCB Board of Directors”



Chat with the President AFOMP: Medical Physics professional development- milestones achieved and Vision 2030

The Asia Oceania Federation of Organisations for Medical Physics (AFOMP), founded on 20 May 2000, is striving to promote medical physics in Asia and Oceania by working in close association with national member organisations, the International Organisation for Medical Physics (IOMP) and other national and international organisations of similar interest. As the federation completes two decades of activities bringing forth new means to face the existing and new challenges in medical physics professional development with 21 national member organisations and a plethora of activities and opportunities for early career and expert medical physics professionals of the region, here is a snippet of the chat with the President AFOMP, Prof Arun Chougule by Dr Mary Joan regarding the professional development activities and the Vision 2030 for AFOMP.

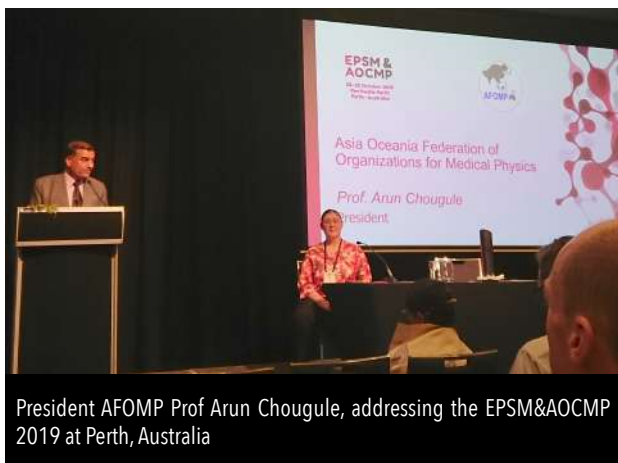
MJ: It has been three years since you took over as President of AFOMP. It was an exceptionally fruitful term for AFOMP even amidst the pandemic. We would like to hear your outlook on the current medical physics professional status in AFOMP.

AC: Thank you very much for the opportunity to speak with you, Thanks for asking me about the medical physics profession in the AFOMP region. As you know, AFOMP was founded in 2000 by visionary founding members from the Asia Oceania region to promote cooperation and communication between medical physics organisations in the region. Over the last two decades, AFOMP has taken many initiatives to promote medical physics and related activities in the region with limited resources and cooperation from IOMP, IAEA, WHO and many other organisations. Asia Oceania is one of the largest regions and hosts over 4.5 billion population, which is over 60% of the world population in about 50 countries. The region is very

heterogeneous in terms of socio-economical and educational standards aspect. When I took over as 7th President of AFOMP in November 2018, the AFOMP was on solid footing with the great work and contributions from the earlier AFOMP office bearers and was entering into adulthood of the federation, having 19 national medical physics organisations as full members and two organisations as associate members of AFOMP.

I am fortunate to have strong, committed support from the AFOMP EXCOM to carry out the planned works. Each AFOMP EXCOM and committee member are working voluntarily, sacrificing their time to uplift the professional status in the region. I thank each one of them for their support and contribution.

If one analyses the current status of the medical physics profession in the region, I have mixed feelings. Though we have made some progress in terms of an increasing number of medical physics education programs, the standard of teaching & training and many medical physicists since the inception of AFOMP, the region needs to do a lot compared to advanced countries/regions. Many countries in the region do not have a single well-qualified medical physicist, or the number is so small that they cannot form a professional organisation. Out of over 50 countries in the region, only 11 have a structured medical physics education program. Only in a few countries, medical physicists are recognised as health professionals. The recognition, respect and salary structure are far from satisfactory in many countries, discouraging talented science graduates from taking the medical physicist profession. Further, many well-qualified medical physicists move out of the region in search of better prospects depriving them of their services to the region.



President AFOM Prof Arun Chougule, addressing the EPSM&AOCMP 2019 at Perth, Australia

Appropriate steps to retain the talent in the region and curtail the brain drain must be planned and implemented.

More efforts need to be put into enhancing the capacity of medical physics education & training by increasing the number of students in existing programs and starting new programs in many countries. Further, the quality of education and training needs to be enhanced by accrediting the educational programs, certifying the medical physicists and registering them as health professionals.

MJ: Your achievements in the past three years as President with the highest impact on the career development of medical physicists of each national member organisation?

AC: In the last three years, we, the AFOM EXCOM, as a team, tried to put our efforts into increasing the standards of education, training and profession by carrying out various activities and programs. We got excellent support from most AFOM member organisations in implementing the activities and programs.

Any activity/program needs resources/funding. With this aim, I started proactively exploring the possibilities of creating corpus funds to start and sustain any new activity undertaken. I got a good response from the industry; now, AFOM has five corporate members. Further, I used my personal contacts to convince and encourage individuals, the family trusts, AFOM official journals and the national medical physics organisation to support financially and start various awards to encourage medical physics students, researchers and professionals to excel in research innovation and publication. I am happy that AFOM could start six new award programs with the support of individuals, the family trusts, AFOM official journals and the national medical physics organisation, thanks to all of them. The details of award programs are available on the AFOM website www.afomp.org.

In addition, AFOM started the "Lifetime achievement award" to recognise the professional contribution of senior medical physicists from the region. On the 20th Anniversary of AFOM, we recognised and awarded 21 medical physicists as "Outstanding Medical Physicists" for their remarkable contributions at the national and international levels.

A special issue of the AFOM newsletter and special issue of Medical Physics International was brought out on the 20th

Anniversary of AFOM, depicting the 20 years' journey of AFOM, the achievements, the tasks for the future and the road ahead.

MJ: Covid-19 pandemic was big challenge mankind faced in the current times. Your experience in steering the medical physics activities in these tough days?

AC: The covid-19 pandemic was an unprecedented challenge for mankind and the medical physics profession. Being health professionals and more involved in cancer diagnosis and treatment, medical physicists provided their professional services during this difficult time putting their own and family's health at risk. AFOM very promptly and timely brought out the guidelines for providing safe and effective medical physics services during the pandemic, and the guidelines were put on the Covid 19 resources page of the AFOM website.

Further, due to the pandemic, the education, training and dissemination of knowledge cannot be abandoned. During this difficult time, AFOM used the technology and resources very effectively and started monthly AFOM virtual webinars in June 2020 very regularly, being continued due to popularity and increasing demand. Further to cater to the demand and need of students, trainees and early career medical physicists, AFOM started virtual monthly AFOM school webinars of 2- 3 hours on basic topics in June 2021. The recordings of the AFOM webinars are available on the AFOM website, so anyone interested can watch them as and when he/she is interested. The annual meeting of AFOM in the form of AOCMP was also held in hybrid mode during the pandemic.

MJ: 20th Anniversary of AFOM was marked with a great academic and educational boost with virtual monthly webinars and schools. What are your suggestions to each NMO for the improvement of educational standards?

AC: As I mentioned earlier regarding the 20th Anniversary of AFOM, we got an opportunity to look back and trace the journey made by AFOM in two decades under seasoned and dynamic



AFOM President honoured as Fellow IOMP at the IUPESM WC 2022 Singapore. Prof Chougule accompanied by Prof John Damilakis (VP-IOMP) and Prof Simone Renha (Chair- Awards and Honours committee IOMP)



AFOMP President with the Medical Physics leaders at the IUPESM World Congress 2022 Singapore

successive leaderships. In 20 years, there will be a fivefold increment in the number of medical physicists in the region. The NMOs have increased from 7 to 20 and with many activities. AFOMP has designed and released a logo to commemorate 20 years of AFOMP with the theme- 20 years of Teamwork, brought out a special issue of the AFOMP newsletter, awarded 21 outstanding medical physicists from the region, started Lifetime achievement awards, virtual webinars and many other activities. The many NMOs participated in and coordinated the AFOMP activities. However, a few NMOs are not as active as desired; sometimes, there is no response or inactive mode. This situation needs to change for to better as communication is the vehicle of transformation. NMOs must be very proactive and utilise the documents published by IAEA, WHO, ILO, IOMP, and IMPCB so that the medical physics education is standardised and accredited, and medical physicists are certified with registration as a health professionals. A structured residency program as per IAEA guidelines needs to be followed. Neighbouring countries/ NMOs should have joint meetings, research programs and much more cooperation with the exchange/sharing of resources to uplift the educational standards of medical physics. Experts and teachers should share the teaching resources and can arrange more virtual lectures so that students are benefitted.

MJ: Your Vision 2030 for the medical physics profession in Asia Oceania?

AC: Our vision 2030 for the medical physics profession in Asia Oceania are listed below

- More and more countries in Asia-Oceania region should form medical physics professional organisations and strengthen the education and training.
- The medical physics education and residency programs need to be accredited.

- The Medical Physics education curriculum should be in tune with IAEA and IOMP guidelines to train medical physicists not for today but for future.
- Enhance the intake of capacity in existing medical physics education programs and start new programs as per the need of the country and the region.
- Medical physicists need to be certified and registered as a health professional.
- A strong collaboration between the NMOs in the region.
- AFOMP should have sufficient corpus funds to support research, education and scientific activities.
- Close collaboration with WHO, IAEA, IOMP, and scientific and regulatory authorities in the AFOMP region.

MJ: To conclude, as you are aware, this is for the next issue of the SCMPCR newsletter. You are a member of the SCMPCR newsletter editorial board also. What are your comments on current SCMPCR activities, and what are your suggestions for the future?

AC: To fill the gap of potential skills and necessary resources for medical physics education, training and cancer research, SCMPCR started its activities in July 2018. The services include conducting teaching and training sessions, sharing information on technical and scientific advances, and fostering quality medical physics education and professional development in South Asia:- Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Srilanka. The hands-on workshops, self-help groups and e-learning programmes were very popular among young medical physicists and of significant practical efficacy in medical physics professional development. These efforts are very much the need of the hour for the region and are highly appreciated. SCMPCR has extended its support to the

professional training of African nationals in medical physics practice. These services shall be enhanced and expanded so other LMI countries can also benefit from capacity building and improving cancer care and support. The SCMPCR newsletter is another commendable venture by the centre for the medical physics students to learn, train, improve and excel in the clinical, academic, research and development arena. There is much to explore, and I take this opportunity to urge the students and young professionals to expand their horizons by taking maximum advantage of the opportunities provided.

MJ: Would you please add on the rationale of IOMP affirmative members? It is particularly important as many countries have NMOs but are mostly inactive.

AC: You have rightly said, some of the IOMP NMOs and the office bearers are not active as they are expected to be. This inactivity and lack of interest are hampering the growth of medical physics in their country. Further, the medical physicists from that NMO are deprived of the proper information,

participation and benefits. This needs to change for the better with the communication of individual medical physicists from the country becoming a bit proactive.

MJ: Thank you, Professor, for sharing your time and enlightening us on the various professional development activities going on in the AFOMP region and across the globe. I am sure your work will open new avenues in clinical practice, education and research for medical physicists. And also, this chat will be a pathfinder for many young medical physicists to transcend in their careers.



Dr Mary Joan is Associate Professor and Radiological Safety Officer at Christian Medical College and Hospital Ludhiana, India. She is a member Professional Relations Committee AFOMP, Executive Committee AMPI-NC and Co-Editor-in-Chief of SCMPCR Newsletter.



Dr.M.S. Agrawal Young Investigator Award 2021-2022

We are delighted to share the recent news on the Medical Physics award, 'Dr.M.S. Agrawal Young Investigator Award 2021-2022' received by Dr.Vindhyasini Prasad Pandey, Assistant Professor & Head, Medical Physics & Regulatory Affairs, Hind Institute of Medical Sciences, Barabanki, Uttar Pradesh, India for outstanding research work in the field of Medical Physics. This award is granted annually by the Association of Medical Physicists of India (AMPI).

Dr.Vindhyasini Prasad Pandey completed his schooling at Kendriya Vidyalaya Airforce station Ojhar, Nasik and Graduated from Regional College Bhopal, one of the four best colleges run by NCERT covering western and central India. He completed BSc BEd (4Year Integrated) course in 2007 and was awarded Pandit Shankar Dayal Sharma Gold Medal by Institute as the Best student award for his exemplary academic, sports, cultural and other extracurricular activities achievements. He completed his Post Graduation in Physics from Barkatullah University, Bhopal, in 2010. He completed Post MSc Diploma in Radiological Physics from Bhabha Atomic Research Centre in 2011, and for his performance in training, he received a Merit certificate from Chairman AERB. He had voluntarily completed one year of clinical internship at Tata Memorial Hospital, Mumbai. Under the Mentorship of Dr.R.A.Kinhikar he completed his internship program and published his first paper in the Journal of Medical Physics. He was selected to participate in ICTP Medical Physics school in Italy in 2015 and received Taqi Binesh Young Scientist Award. In 2018, Madhya Pradesh Science and Technology awarded him a fellowship training program of Young Scientist at Rani Durgawati University, Jabalpur. In 2017 AMPI awarded him the Meritorious Medical Physicist award for his contribution to the field with limited resources. Recently in 2022, in AMPICON 2021-2022 in Begaluru, he was awarded Dr.M.S.Agarwal Young Investigator award for his contribution to medical physics research. In 2019, he completed his PhD in Physics from Barkatullah University. He has 18 research papers published to his credit and has reviewed more than 20 papers in indexed journals. He had served in many government and private institutes and established departments from ground zero. He was involved in commissioning Varian and Elekta linear accelerators and Brachytherapy Units and worked with Gamma Knife in VIMHANS Hospital, New Delhi. Presently serving as Assistant Professor and Head, Medical Physics and Regulatory Affairs Department of Hind Institute of Medical Sciences, Barabanki, U.P. He is guiding many PhD students registered under him and teaching for MD Radiotherapy, BSc Radiotherapy and MSc Nuclear Medicine students to disseminate his knowledge and experience.



4th Medical Physics Workshop

Zainab Ronaque¹, Hira Nazim²

¹Senior Medical Physicist, Department of Radiation oncology, Dr. Ziauddin Hospital, Karachi-Pakistan

²Dosimetrist, Department of Radiation oncology, Dr. Ziauddin Hospital, Karachi-Pakistan



The 4th Medical Physics Workshop was held at Dr. Ziauddin Hospital, North Nazimabad Branch- Karachi, on Saturday, 19th February 2022. The workshop's objective was to share the knowledge and recent activities of Medical Physics in Pakistan. The scientific program was designed in consultation with senior clinical medical physicists.

The following topics were part of the workshop: Introduction to current activities of Pakistan Organization of Medical Physicists, Clinical experience with Halcyon V2.0 (FFF) Linear accelerator at Dr. Ziauddin Hospital Brief introduction of AAPM TG-198 Report: An implementation guide for TG-142 quality assurance of medical accelerators, Estimation of radiation doses from diagnostic Nuclear Medicine Procedure, Active Breathing Control (ABC): Sharing our initial experience and VMAT of Head and Neck- Inspired by RCC IMRT training curriculum

Participants were Medical Physicist, Technologist, Oncologist and University students. Overall, the response to the workshop was overwhelming. The informal and personal interactions were very well received amongst the participants. The opinion of the majority of participants was to conduct such workshops frequently. 3.0 CME Credit hours were given to each participant.

Medical Physics Transdisciplinary Platform

MPTF Learning Platform

Online Learning Medical Physics Education Platform

In developing countries, medical physics education still encounters difficulties due to a lack of awareness, resources and trained faculty. Pakistani medical physicist has taken a new step toward medical physics professional education by introducing a new platform Medical Physicist Transdisciplinary Foundation "MPTF". MPTF aims to promote the continuation of education for the clinical medical physicist. It also provides a mutual forum for the medical physicist community of Pakistan to share their experiences. Currently, this platform focuses on three major domains: Webinar series, Case Discussion or Plan Review Meeting and Journal Club/ Critical Appraisal or sharing of project. Following webinar and seminar activities have been done on the platform

- Radiobiology held from 14th to 15th January 2022
- Why Certification for Medical Physicist held on 15th February 2022
- Evolution of Leksell Gamma Knife 30 years of Experience held on 1st March 2022
- Review of small field dosimetry detectors held on 12th March 2022. Academic hour
- Reference dosimetry of photon beam radiation therapy held on 21st March 2022.
- Reference dosimetry of electron beam radiation therapy held on 24th March 2022.
- Dosimetric Consequences of prostate motion during therapeutic irradiation held on 30th March 2022.
- Physics perspective: Selection, procurement and commissioning of radiotherapy equipment held on 21st May 2022
- Cross calibration of farmer chambers with farmer chamber and cross-calibration of parallel plate chamber held on 25th May 2022.
- Virtual lecture series from the Physics of Radiation Therapy held from 20th June 2022 to 24th June 2022.

Asad Yousuf¹, Bushra Intakhab²

¹Agha Khan University Hospital, Karachi-Pakistan

²Sindh Institute of Urology and Transplantation, Karachi-Pakistan



<https://www.youtube.com/c/MedicalPhysicistTransdisciplinaryFoundation>



<https://m.facebook.com/MPTPpakistan>

Special Guest

Invited Speaker

Special Lecture

PHYSICS PERSPECTIVE: SELECTION, PROCUREMENT AND COMMISSIONING OF RADIOTHERAPY EQUIPMENT

Speaker: Muhammad Abdul Kareem, Chief Radiation Scientist, Shujaat Khanum Memorial Cancer Hospital & Research Centre, Lahore

Date: 21st May, 2022
At: 11:00 AM (PST)

Participation: Medical Physicist, Radiation Oncologist, Medical Engineers, Radiotherapist and Trainees

Join us via Zoom Link: Meeting ID: 878 123 1234 Password: 123456

Follow us on Youtube and Facebook

Virtual Lecture series from The Physics of Radiation Therapy

A tribute to Faiz M. Khan

June 20th to 24th 2022

We are pleased to invite you all to join our virtual lecture series from Faiz Khan. Virtual speakers will share their expertise from their field. It will be hosted by Agha Khan University Hospital with the collaboration of The MPTF Foundation and POMP. We have created a unique program for the Physicians, Radiotherapists, Radiation Oncologists, Residents, students, and students.

We will be accompanied by Dr. Faraz Mahmood Khan who shares his experience in Medical Physics in the world.

The schedule of the event and registration link is given below for more detail services.

info.mptpfoundation@gmail.com

WEBINAR SERIES

SPECIAL LECTURE

PHYSICS PERSPECTIVE: SELECTION, PROCUREMENT AND COMMISSIONING OF RADIOTHERAPY EQUIPMENT

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WEBINAR SERIES

SPECIAL LECTURE SL2

Cross calibration of Farmer Chambers with Farmer Chamber

Cross Calibration of Parallel Plate Chambers with Farmer Chamber

Speaker: Talat Mahmood, ACPSEM, CRCMP, NIACPSM, MPOMP, EBM, IAEA, Supervising Medical Physicist Radiation Oncology | Sir Charles Gairdner Hospital, Australia

Date: 25th May, 2022
At: 2:30 PM (GMT+5)

Participation: Medical Physicist and Trainees

Join us via Zoom Link: Meeting ID: 878 123 1234 Password: 123456

Follow us on Youtube and Facebook

info.mptpfoundation@gmail.com

WEBINAR SERIES

WHY CERTIFICATION FOR MEDICAL PHYSICIST?

A path way towards IMPCB certification

15th FEBRUARY 2022
16:30-18:30 PST

SPEAKER: Rahim Gohar DIPMPCB, CMD Senior Medical Physicist AKUH, Nairobi

MODERATOR: Nadeem Iqbal, Medical Physicist, Department of Radiation Oncology, MPTF Karachi

ORGANIZED BY: Medical Physics Transdisciplinary Platform

AUDIENCE: Medical Physicist, Radiation Technologists, Radiation Oncologists, Residents and Trainees

For Zoom Link, Contact: mptp.pakistan@gmail.com

WEBINAR SERIES

RADIOBIOLOGY

14th-15th JANUARY 2022
15:30-18:30 PST

SPEAKER: Joseph M. Shaw, MS, DABR, Chief Medical Physicist, St. Luke's Hospital Center Rapids, Florida Hospital Dubuque, Iowa, USA

MODERATOR: Nadeem Iqbal, Medical Physicist, Department of Radiation Oncology, MPTF Karachi

ORGANIZED BY: Medical Physics Transdisciplinary Platform

AUDIENCE: Medical Physicist, Radiation Technologists, Radiation Oncologists, Residents and Trainees

Organized by: MPTF Foundation

March 12, 2022, on Saturday
10:00 am to 12:00 pm (PKT)
Online via Zoom Link
Contact: mptp.pakistan@gmail.com

Review of Small Field Dosimetry Detectors

Participation: Medical Physicist, Radiation Oncologist, Medical Engineers, Radiotherapist and Trainees

MODERATOR: Nadeem Iqbal, Medical Physicist, Department of Radiation Oncology, MPTF Karachi

AUDIENCE: Medical Physicist and Trainees

MEDICAL PHYSICS ACADEMIC HOUR

Organized by: MPTF Foundation

March 20, 2022, on Wednesday
10:00 am to 12:00 pm (PKT)
Online via Zoom Link
Contact: mptp.pakistan@gmail.com

Dosimetric Consequences of Prostate motion during Therapeutic Irradiation

Participation: Medical Physicist, Radiation Oncologist, Medical Engineers, Radiotherapist and Trainees

MODERATOR: Nadeem Iqbal, Medical Physicist, Department of Radiation Oncology, MPTF Karachi

AUDIENCE: Medical Physicist, Radiation Technologists, Radiation Oncologists, Residents and Trainees

MEDICAL PHYSICS ACADEMIC HOUR

WEBINAR SERIES

REFERENCE DOSIMETRY OF PHOTON BEAM RADIATION THERAPY

21st MARCH 2022
15:00-18:00 PKT

SPEAKER: Talat Mahmood, ACPSEM, CRCMP, NIACPSM, MPOMP, EBM, IAEA, Supervising Medical Physicist Radiation Oncology | Sir Charles Gairdner Hospital

MODERATOR: Nadeem Iqbal, Medical Physicist, Department of Radiation Oncology, MPTF Karachi

ORGANIZED BY: Medical Physics Transdisciplinary Platform

AUDIENCE: Medical Physicist and Trainees

For Zoom Link, Contact: mptp.pakistan@gmail.com

WEBINAR SERIES

EVOLUTION OF LEKSELL GAMMA KNIFE 30 YEARS OF EXPERIENCE

1st MARCH 2022
16:30-18:30 PKT

SPEAKER: Joseph M. Shaw, MS, DABR, Chief Medical Physicist, St. Luke's Hospital Center Rapids, Florida Hospital Dubuque, Iowa, USA

MODERATOR: Nadeem Iqbal, Medical Physicist, Department of Radiation Oncology, MPTF Karachi

ORGANIZED BY: Medical Physics Transdisciplinary Platform

AUDIENCE: Medical Physicist, Radiation Technologists, Radiation Oncologists, Residents and Trainees

For MS Team Link, Contact: mptp.pakistan@gmail.com

Sri Lanka assists Papua New Guinea (PNG) in strengthening human resources through internship training arranged for physicists and radiotherapy technologists

Sanja Philip Ipu, Postgraduate Student, Department of Nuclear Science, University of Colombo, Sri Lanka

Papua New Guinea (PNG) is among nations in the world battling lifestyle diseases like cancer over recent years. According to recent statistics in many provincial referral hospitals, cancer incidents increased rapidly, with cervical, oral, head and neck, and breast cancers being the most common admissions in the registry. In order to meet the increasing demand in cancer management, the National Government of Papua New Guinea, through its agency arm, the National Department of Health, has taken some bold steps to address this dying need. The government and stakeholders have funded its two major national referral hospitals, Port Moresby General Hospital (PMGH) and the Angau Memorial General Hospital, to develop and revive cancer services.

PMGH proposed a national cancer institute in 2019 and started its construction by building a bunker that will house two linear accelerator machines (True beam Varian) plus a brachytherapy unit. To execute its proposed vision of serving the people, PMGH also focuses on human resource development and capacity building so that its staff are adequately trained.

PNG lacks human resources to operate current and proposed cancer facilities. The PNG has employed three radiation oncologists from Sri Lanka and India. Unfortunately, there were no trained medical physicists and RT technologists. In this regard, the hospital was fortunate to have negotiations with the Department of Nuclear Science of the University of Colombo, Sri Lanka, to train medical physicists and radiotherapy (RT) technologists. Through the assistance of the University, the hospital successfully trained three Radiation Therapy Technologists (RTTs) with advanced radiotherapy. Also, the PMGH was fortunate to send two staff for medical physics training; one



Physicist Mr. Luwi Gabriel completed his MSc in Medical Physics at UOC with one year internship training at NIC Maharagama

completed a postgraduate degree in medical physics and one-year training in 2022, while the other staff is expected to complete his postgraduate degree at the end of this year. The staff had the tremendous privilege of accessing the modern facilities in one of Sri Lanka's leading National Cancer Institute, Apeksha hospital Maharagama and Asiri AOI Cancer Centre, Asiri Surgical Hospital. During their final farewell event of the Radiation Therapist Technologists trainees, they expressed their applause of appreciation to the University of Colombo for making their training successful by seeking permission from government authorities to come to Sri Lanka for training. The RT Technologists left Sri Lanka for Papua New Guinea early this



RT technologists receiving certificates for one year internship from Dean Faculty of Science, University of Colombo, Sri Lanka.



Trainers and trainees during the farewell event

month (July). The PMGH was on the ground to receive them; the hospital management arranged a formal luncheon for their welcome. On behalf of the Hospital management and the government, the Chief Executive Officer (CEO) Dr Paki Molumi congratulated the trainees for being the nation's ambassador during their training in Sri Lanka. He further extended his gratitude to the University of Colombo for arranging the training program to its staff. The CEO said that the hospital and the government of PNG are looking forward to sending its staff for training in the future when needed. He expressed the importance of training the right human resource as a key element to service delivery. Some of the dosimetry equipment and other necessities started arriving in recent months as the construction of the bunkers is in its final stages and expected to open by August next year (2023). While waiting, the three

radiotherapist technologists assist the consultant oncologists with patient registry and data arrangement in preparation. The hospital also engaged its two physicists (Mr. Luwi Gabriel and Mr. Glenn Singke) to look after the dosimetry equipment ordered by the hospital. When the demand for work rises during the operation of the new cancer centre, the hospital is looking forward to training more staff, and the hospital will be the leading national teaching institution in the field of oncology soon.

PMGH is also developing programs to train its staff. The University of Papua New Guinea (UPNG) senate has endorsed a curriculum in Clinical Oncology to commence training in 2024. Furthermore, Medical Physics, Pediatric Oncology and Nursing Oncology Curriculum are in progress.



RT technologists returned to PNG and the Chief Executive Officer (CEO) Dr Paki Molumi received them at PMGH (left) and an aerial view of the PMGH Cancer Centre Project (right).



The main objectives of SCMPCR

- To organize awareness, prevention, and screening program for cancer disease;
- To provide adequate training to all personnel associated with cancer treatment;
- To establish the clinical residency training program for medical physicists;
- To develop the infrastructure of e-learning and library;
- To establishment Welfare home for poor cancer patients;
- To build a self-help group for cancer patients;
- To establish a team who will assist in the management and quality control (QC) procedure for the diagnostic radiology equipment in the districts levels;

“SCMPCR was established in 3rd July 2018 is comprised of a group of philanthropic personnel with representatives from different regions of South Asia to work on different projects. SCMPCR is an autonomous body, under Alo Bhubon Trust (Alo -BT) and accountable to its board of trustees/governors. It is a non-profit public partnership which will seek support from other sources. It shall work conjointly with various nationals and international organizations. Major activities of SCMPCR are: to produce skilled manpower, enhance health education and establish a welfare home for cancer patients”

MISSION

TO Achieve UNDP
SDG-goal 3 & 4

OUR VISION

TO

PROVIDE QUALITY SERVICES IN
CANCER TREATMENT THROUGH
TRAINING, EDUCATION
INCLUDING
E- LEARNING IN
RADIOTHERAPY AND
IMAGING DISCIPLINES.

GOALS OF SCMPCR

Major activities of SCMPCR are to produce skilled manpower, enhance health education and establish a welfare home for cancer patients.

UNDP SDG-goal 3 (Good Health & Well-being)

Awareness program for the mass people for different communicable and non-communicable diseases, especially for cancer patients.

UNDP SDG-goal 4 (Quality Education)

Arranging and conducting training programs to develop skilled manpower. It realizes the need to educate specially; women regarding the screening and prevention of cancer treatment under UNDP SDG-goal 4.

SCMPCR

PROJECT of ALO BHUBON TRUST (Alo-BT)

FIND US

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OUR MOTTO

QUALITY EDUCATION AND HEALTH SCIENCE FOR PATIENT BENEFIT