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Bangladesh Medical Physics Society

Voice of BMPS

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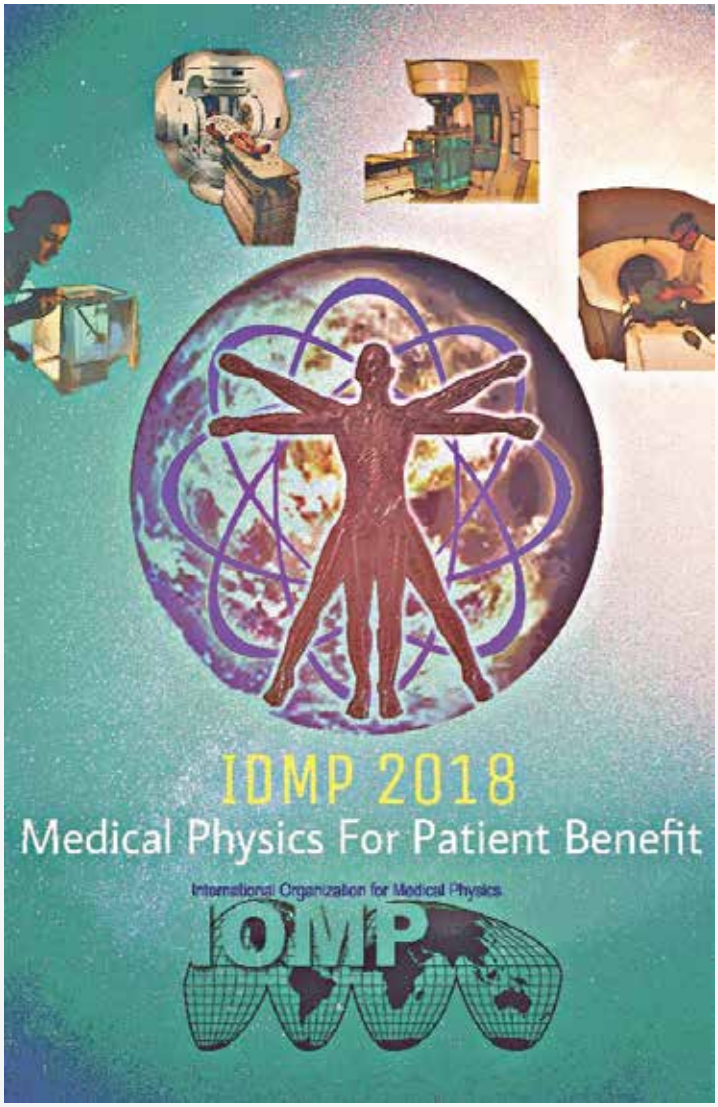

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Voice of BMPS

Editorial

Dear Colleagues,

On behalf of the BMPS, I welcome you to "Voice of BMPS" (Electronic Newsletter of Bangladesh Medical Physics Society), Issue-6 on the occasion of International Day of Medical Physics (IDMP), 7th November 2018.

The theme of IDMP 2018 is ***"Medical Physics for Patient benefit"****. To raise awareness about the role of a medical physicist's for benefit of patients. The* ***"Bangladesh Medical Physics Society"*** *celebrates International Day of Medical Physics (IDMP) on November 7, is an important date in the history of medical physics. On that day in 1867, Marie Sklodowska-Curie, known for her pioneering research on radioactivity, was born in Poland. Every 7th November BMPS celebrates this day through organizing seminar, rally as well as publication of an E-newsletter Issue 6 in 2018 is a continuation of each year.*

In developing countries like Bangladesh advanced therapy like imaging and diagnostic technologies are installed both in governmental and non-governmental sectors. In radiation oncology, medical physicists are needed to ensure that treatments are safely delivered with the highest achievable quality. As far as research and development is concerned, medical physicists have a leading role and are the driving force in improving radiotherapy techniques and technologies.

Since the inception of BMPS in 2009, it is organizing Conference, Seminar, Workshop and public awareness programs every year. In the meantime, BMPS has already achieved an international reputation for their relentless activities in Bangladesh: ***nevertheless, 2018 is the remarkable year for the BMPS as it has been able to make ministry of health and DGHS to create post in Governmental hospitals. Another success of BMPS is that,it could create a platform of conducting examination for accreditation of individual medical physicist with the help of IMPCB and IOMP for Bangladesh and neighboring countries in 2018.***

Voice of BMPS has tried to reach out the activities of the different scientific and educational program or research organized/participated by BMPS members from 08 November 2017 to 06 November 2018. ***In this newsletter, there are scientific articles, articles on CPD, news, events, awards and so on. We are glad to announce that CPD has done a remarkable task in producing QMP in Bangladesh, which are published in this volume.***

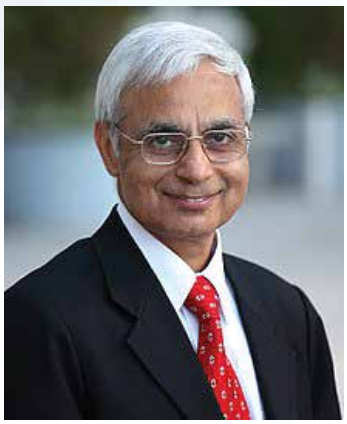
Bangladesh has now young medical physicist who are taking responsibility for safety and quality treatment. In future BMPS will play a role for the Medical physicists for leading and evaluating emerging challenges in quality and safety of radiotherapy. BMPS is taking proactively the necessary steps to maintain and advance our important role in clinical medicine.

Thank you to all who took the time to share their praise for the redesigned BMPS newsletter. The Board is delighted to hear that the new format was well-received by the members. I am strong believer of continued communication to enhance cooperation and collaboration among individuals & various national and international organizations in the field of medical physics for improving educational & professional status of medical physicists.

Looking forward to your feedback.

Prof. Dr. Hasin Anupama Azhari
Founder President, BMPS
Member of the Advisory Committees, BMPS
Head, Dept. of Medical Physics and
Biomedical Engineering, Gono University

President, IOMP



Dear Fellow Colleagues in BMPS,

At the outset, I wish to congratulate you on active contributions in organizing the International Day of Medical Physics (IDMP).

Designated day celebration provides opportunity to act for the benefit of the profession on one hand and contribute to the target audience, that is, patient on the other. What we are and what we do form the core of actions. Unfortunately, the role of medical physicists is less well known than many of our other colleagues primarily because we are not so much on front end when dealing with the patients. We need to let members of the public know what we do for patient benefit. Also, we need to enhance actions that put us on front end. IDMP provides us opportunity to reach out to public besides our own professional colleagues. We often tend to confine ourselves to our professional colleagues. I will urge colleagues in BMPS to use this opportunity to target public. I am sure there are many innovative ways to extend the outreach using both the public media and social media.

I wish BMPS great success in joint mission of our profession.

Happy and successful celebrations of IDMP 2018.

Most sincerely,

Madan M. Rehani
President, IOMP

Coordinator, IDMP

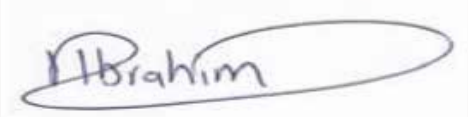
Wednesday October 17, 2018

Dear Colleagues,

The first day statement of my high school physics teacher was: "You can find physics in all aspects in our life". Of course everybody in class laughed out loud and each one of us started challenging the teacher with many things in our life we thought had nothing to do with physics. The confident teacher will answer all inquiries and questions and trace it back to physical phenomena. That was the astonishing moment where all students started to like the class and wait eagerly to discover and learn about physics and its application in our life.

During my 20 years of experience, I have learned that Medical Physics is not only a profession to work in a hospital or to teach at a university, it is a way of seeing and experiencing life. "We do not teach you how to use radiation in diagnosis or treatment of cancer only, but we also teach you to be the problem solvers in anything you encounter in your life"; Professor Colin Orton, my advisor and the head of Medical Physics Department at WSU. And this is what medical physics really is about.
I wish all my colleagues around the World a Happy Medical Physics Day and I can really say Physics Equals Life. Enjoy the celebration of this day by giving life to our prestigious patients since our theme for this year is: Medical Physics for Patient Benefit.

Ibrahim Duhaini, BS, TD, MS, FIOMP, DIMPCB



Chief Medical Physicist & RSO
Rafik Hariri University Hospital
MP Instructor at the Lebanese University
MP Instructor at the American University of Science & Technology.
CEO & GM at Radiation Expert Group.

ARTICLES

BMPS

Medical Physics in Radio-Oncology in Bangladesh The Rapid Development - Help to Self-reliance

Ulrich Quast, Ph.D., Germany

When I first visited Bangladesh in 1995 to give some lectures at BUET, Dhaka, I learned, that Bangladesh has a population greater than Germany, but had only four Co-60 treatment units for cancer radiotherapy instead of about 200 needed radiotherapy treatment units and there was no medical physicist at that time. There was, howeverta good potential of physicists in natural sciences due to historical tradition. A few physicists called scientific officers were working in nuclear medicine and radiotherapy. There were no academic teaching courses in medical physics so far. Besides the lack of qualified staff in radiotherapy, there were insufficient funds, thus there was a lack of equipment, lack of equipment maintenance, unavailability of spare parts, as well as an inadequate recording of radiotherapy treatment and patient follow-up, too.

This situation was the reason why the recently (1993) founded DGMP-working group WG 16 on Medical Physics for Developing Countries of the German Association of Medical Physics (Deutsche Gesellschaftfür Medizinische Physik) started its activities with the initiative of Dr. Golam Abu Zakaria in Bangladesh. In the arrangement with Dr. Gias Uddin Ahmad and his colleagues from the Bangladesh University of Engineering and Technology, BUET, annual one-week Seminars cum Workshop were planned and organized in Bangladesh (at Dhaka, Rajshahi and Chittagong [1997 with Shahin Akhtar, Ph.D.]).

In close cooperation, a few medical physicists from Germany (Fig. 1-3; G. A. Zakaria from the Gummersbach Teaching Hospital, University of Cologne [WG-16 convenor since 1998], K.-H. However, from the German Cancer Research centre DKFZ[WG-16 convenor 1993-1998], and U. Quast from the Essen-University-Hospital) had prepared basic lectures in medical physics in cancer diagnostics and treatment, in diagnostic imaging, in external beam radiotherapy, brachytherapy, dosimetry, treatment planning, in quality assurance and in radiation protection. It was the intention to train to understand how to start operating radiotherapy equipment optimally as well as to learn, which data have to be measured and which can be derived from publications.

In every seminar, about 70 physicists participated who are interested to become a clinical medical physicist in radiotherapy (Fig. 4, 5). It was interesting to observe, that about one-third of them were women, while in Germany there were less than 10% women-physicists. woman rights in Bangladesh. Details about her life and work can be seen in a biography, G. A. Zakaria has published in 2006.

These Seminars cum Workshop have been performed in 1996, 1997, 1998, 1999, 2000 and later. On the last day, on Friday (radiotherapy has closed) a whole day workshop was performed for training for self-reliance: how to use a Co-60treatment unit. With some dosimetric equipment from the IAEA and from Germany, the measurements (Fig. 6) and evaluations have been performed in small groups. At one meeting, a dosemeter spent

from the Heidelberg University did not yet arrive at the hospital in time. It still was waiting at the customs. A Bengali colleague had the idea, to ask the customs to borrow the dosimeter for two days, after that they could continue to perform the customs procedure.

For us, it was a great pleasure to come to these courses to Bangladesh. We were welcomed very friendly. Everything was organized well. The participants enjoyed the courses, were very engaged and were eager to learn as much as possible. In the evenings it was difficult to stop the interesting discussions. It was a great pleasure to see their thankfulness (Fig. 7-10).

The dates of these Seminars cum Workshop where planned so that we had the possibility to participate at AMPI-conferences of the Association of Medical Physics of India before or after. I have participated five times at meetings in Bangladesh and twelve times at AMPI-conferences.

According to our recommendations and following many discussions with Bengali colleagues, in 1998 the Bangladesh Medical Physics Association (BMPA) has been founded (in 2009 BMPS). Besides our help to self-reliance, there was arranged a close cooperation with institutions of the Association of Medical Physicists of India (AMPI), it also was arranged with financial support by DAAD (German Academic Exchange Service, Deutscher Akademischer Austausch-Dienst) that Bengali medical physicists could work for weeks in German hospitals and institutes to learn to use modern radiotherapy equipment and methods, and that Bengali medical physics students could perform there PhD-Work in German universities followed by their examination in Bangladesh, in a sandwich program (e.g. F. Nasreen). Several Bengali medical physicists took part in these exchange programs.

On the initiation of Prof. Zakaria, the Department of Medical Physics and Biomedical Engineering (MPBME) was established at the Gono-University in 2000, the first and only department of medical physics and biomedical engineering in Bangladesh. Since 2001, G. A. Zakaria is the patron professor of this university and has given structure to the international bachelor and master program in medical physics.

In reflecting that “the widening gap in economics and in the influence between the nations of the south and the north is basically the science gap” (Prof. Abdus Salam), it is the historic challenge in the 21st century in the application of science to secure the survival of the whole mankind. Medical Physics in developing countries can gain a lot through the exchange of knowledge by international cooperation with developed countries. In this sense, the activities of the German DGMP WG-16 were the help to self-reliance in developing medical physics in radiation therapy in Bangladesh (Fig. 11)

Fig. 1: G. A. Zakaria

Fig. 2: K.-H. Hoever

Fig. 3: U. Quast

Fig. 4: Seminar at BUET in Dhaka

Fig. 5: Prof. Ahmadand participants

Fig. 6: IAEA-Phantom

Fig. 7: Discussions

Fig. 8: Measurement-Evaluations

Fig. 8: Measurement-Evaluations

Fig.10: Shahin Akhtar, Fatema Nasreen

Fig. 11: At the end of asuccessful Seminar cum Workshopat Dhaka, Delta Hospital in 1999

Commissioning Experience of First Elekta Versa HD Signature Linear Accelerator (LINAC) in Bangladesh

K. M. Masud Rana, Dr. Murugan Appassamy,
Department of Radiation Oncology, Apollo Hospitals Dhaka

First Elekta Versa HD Signature Digital Linear Accelerator (LINAC) Commissioned in the Apollo Hospitals Dhaka at Radiation Oncology department, Bangladesh and put into clinical operation at the end of 2017. The purpose of this study is to report the dosimetric aspects of commissioning performed on an Elekta Versa HD linear accelerator (LINAC) with high-dose-rate flattening filter-free (FFF) photon modes and electron modes. Beam data acquisition for commissioning was based on the recommendations of AAPM TG-106 for appropriate detector selection, measurement techniques, etc. Measurements were made using a Blue Phantom² water tank with a scanning range of 48 × 48 × 41 cm3. During the measurements different types of detectors: field diode (SFD), photon field diode (PFD), small cylindrical ion chamber (CC01), and a "medium-sized" ion chamber (CC13) were used and all the scanned PDD and profile scans were processed using My QA software (IBA Dosimetry, Germany) navigation software. Acceptance and commissioning was performed on the Elekta Versa HD LINAC with five photon energies (6 MV, 10 MV, 15 MV, 6 MV FFF, 10 MV FFF), five electron energies (6 MeV, 8MeV, 8MeV, 12 MeV and 15 MeV) and 160-leaf (5 mm wide) multileaf collimators (MLCs). The measurements also include head scatter factor (Sc), relative photon output factors (Scp), universal wedge transmission factor, MLC transmission factors, and electron cone factors. Mechanical and dosimetric data were measured and evaluated.

Pic: Commissioning Activities Phase-1

Gantry, collimator, and couch iso-centricity measurements were within 1 mm, 0.6 mm, and 0.7 mm in diameter, respectively. The PDDs of 6 MV FFF and 10 MV FFF beams show deeper dmax and steeper falloff with depth than the corresponding flattened beams. While flatness values of 6 MV FFF and 10 MV FFF normalized profiles were unexpectedly higher than the corresponding flattened beams, the symmetry values were almost identical. The cross-plane penumbra values were higher than the in-plane penumbra values for all the energies. The MLC transmission values were 0.5%, 0.6%, and 0.6% for 6 MV, 10 MV, and 15 MV photons beams, respectively.

Pic: Commissioning Team

Dosimetric measurements demonstrated the agreement of checked parameters with the manufacturer's specification and IEC standards as well as international recommendations and literatures. The outcome of radiation treatment is directly related to the accuracy in the dose modeled in the treatment planning system, which is based on the commissioned data.

This Versa HD linear accelerator (LINAC) provides a single platform to deliver advanced stereotactic treatments and conventional radiotherapy treatment throughout the body, including the brain and delivering the flexibility to treat more patient and wider variety of indications.

Communication Skills for Medical Physicist During for Smooth Installation, Acceptance and Commissioning of Radiotherapy Machines

Suresh Poudel[1] , Sagar Upadhayay[1], Hasin Anupama Azhari[2],Golam Abu Zakaria[2,3]
[1]Nepal Cancer Hospital and Research Center, Harisiddhi, Lalitpur, Nepal
[2]South Asia Centre for Medical Physics and Cancer Research, Savar, Dhaka
[3]Department of Medical Radiation Physics, Gummersach Hospital, Academic Teaching Hospital of the University of Cologne, Gummersbach, Germany

There are many things which a medical physicist has to undertake beyond his regular jobs, before or at the time of machine installation. If the hospital is setting up a new radiotherapy department, a physicist is asked to provide hospital the technical support in regard to selection of dosimetric equipment, co-ordinate or facilitate the installation of machine which needs the co-operation of hospital management, radiation oncologists, technologists, IT department, engineering department, logistic support department and vendors.

In these regards, a physicist has to communicate effectively to the hospital management about action plan and progress of the project and regularly aware the management about the need, problems, challenges and strategies to smoothly install the new radiotherapy equipment at the department. It would be the responsibility of the physicist to prepare a tentative work plan and discuss with the hospital.

A physicist has to discuss the needs of a radiotherapy department with the engineers. This helps them to do minor adjustments as per the need of the department. It includes radiation safety aspects, electrical supply, temperature and humidity control mechanisms, logistic support for taking the equipment comfortable at the installation site, etc. Logistic support is equally essential to accomplish the installation comfortably and smoothly. Similarly, a physicist should work closely with the hospital IT department for facilitating the proper building of network in the department as per the need of both vendor and department. A physicist shall assume active roles and be the center of communication during installation time to prevent delays in installation activities. In addition, a physicist may have a role to prepare awareness and promotional material that a hospital may need. In addition, a physicist shall inform hospital management on aspects of legal regulations, both national and international, pertaining to ionizing radiation and transportation of radioactive substances. This will help the hospital management to act in time and hence to facilitate the installation.

Parallelly, a physicist would be working on selecting the dosimetric and immobilization devices as per the need of the department and with the discussion with the radiation oncologists, radiotherapy technologists, and management. A physicist shall have minimum knowledge on the process of bidding and evaluation of bids and could give suggestion to the hospital by preparing the comparison tables of dosimetry, immobilization, and other accessories. Besides physicists would play important role in preparing SOPs, protocols and other documents necessary for the department vis-à-vis preparing for acceptance test, radiation surveys and commissioning of machines.

To conclude, a physicist shall assume the active role with a good communication, technical and administrative skills before and during the time of machine installation for proper, safe and timely installation of radiotherapy equipment in the radiotherapy department. Also, s/he shall co-ordinate with other important professionals and workers including the hospital management and vendors for smooth progress of the work.

Kilovoltage Intrafraction Monitoring (KIM)-Guided Gating for Prostate Cancer in Radiation Therapy

Rahnuma Nur Nawrin

Radiation Therapy for prostate cancer has been improved with intensity modulated radiation therapy (IMRT) and pretreatment image guided radiation therapy (IGRT) by improving tumor control and lower rates of late rectal toxicity. However, even with IMRT and IGRT, the target dose can be reduced and normal tissue dose can be increase simultaneously due to intrafraction prostate motion during radiation therapy. The real-time tracking radiation therapy system such as CyberKnife, linear accelerator (LINAC; frequent x-ray imaging during treatment), Calypso, Novotek , and RayPilot can be used for prostate cancer treatment. But additional dedicated and typically expensive equipments are needed for these methods. KIM is a new real-time image guidance technology that uses the gantry mounted x-ray imaging system of a standard LINAC to image and detect the 3D positions of implanted markers.

For KIM 3 gold seeds (4.5-mm length, 1.0-mm diameter) marker are implanted in the prostate. Then kV 2D images are acquired during MV treatment and prostate gold markers are segmentation in those images. The KIM software logs 3D positions of each of the markers during treatment. 2D or 3D images are reconstruction and 3D position is determined. Before treatment 5-second kV imaging sequence was delivered to the gated position to check whether the prostate was still in the gated position. The kV beam was on throughout the MV treatment delivery to provide the real-time guidance.

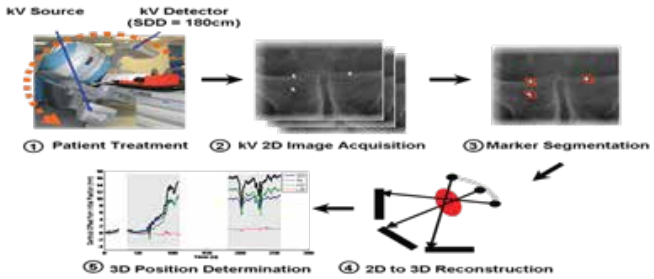


Figure: Working procedure of KIM [1]

If prostate motion is greater than 3 mm in any of the 3 dimensions for more than 5 seconds, the treatment was paused and patient position was realigned to the latest measured position. Accuracy and precision was determined by comparing the motion detected in real time by KIM with KV-MV triangulation analysis after treatment.

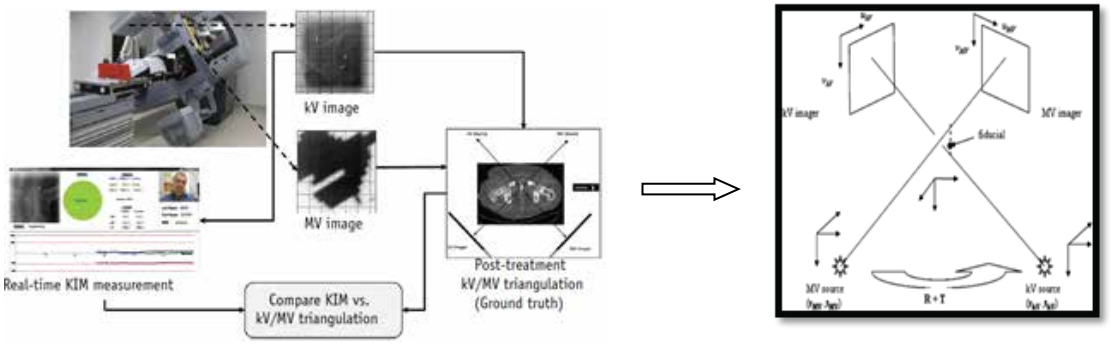


Figure: KV-MV triangulation analysis [1, 2].

This method was successful in 197/200 fraction where largest motion was 11.7 mm. Almost all motion was within 3 mm and able to eliminated large displacement of prostate (>5mm). The accuracy and the precision were well below 1 mm.

KIM uses gold markers which is a standard use for IGRT. As compared to the Calypso gold markers used in KIM are smaller, easier to implant, less costly, and more MRI-compatible. But patient gets additional dose for monitoring; this is a drawback of this technique.

Reference:

1. Paul J. Keall, PhD, Jin Aun Ng, PhD, Prabhjot Juneja, PhD et al., Real-Time 3D Image Guidance Using a Standard LINAC: Measured Motion, Accuracy, and Precision of the First Prospective Clinical Trial of Kilovoltage Intrafraction MonitoringeGuided Gating for Prostate Cancer Radiation Therapy. Int J Radiation Oncol Biol Phys, Vol. 94, No. 5, pp. 1015-1021, 2016.

2. W Liu, R D Wiersma, W Mao, G Luxton and L Xing, Real-time 3D internal marker tracking during arc radiotherapy by the use of combined MV–kV imaging. Physics in Medicine & Biology, Volume 53, 2008.

Dosimetric Verification of Reference Air kerma Rate for HDR Afterloading Units With Ir-192 and Co-60 Photon Sources: Comparison of Different International Protocols.

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The source calibration is an essential part of the quality assurance programme for dosimetry of brachytherapy sources. Before therapeutic application of brachy sources, dosimetry recommendations and regulations in practice requires an independent measurement reference air-kerma rate by a qualified medical physicist. The purpose of the work, therefore, to compare air-kerma rate measurements as recommended by different dosimetry protocols for Ir-192 and to test their applicability to Co-60 sources.

Dosimetric verification of HDR afterloading source specification is done according to three protocols: DIN 6809-2 (1993) in combination with DGMP-Report 13 (2006), IAEA-TECDOC-1274 (2002) and AAPM Report 41 (1993) for the nuclides Ir-192 and Co-60 sources. Measurements of the reference air kerma rate are performed with different methods: using the well-type ionization chamber, solid water phantoms and free in the air. The measurements with all protocols and methods showed deviations from the certified specification smaller than about 1.22% for Ir-192 and 1.76% for Co-60-Sources. The RAKR determined using different calibration methods are in good agreement with the manufacturer stated value. Air kerma rates are measured for Co-60 HDR sources using existing protocols sufficiently enough to verify the source calibration provided by the source certificate.

It has been shown that with careful use of all calibration system protocols an accurate determination of source strength can be obtained. It follows that medical physicists have the freedom to establish their own QA protocol according to specific demands from equipment and organization. All obtained test results are found to be within the given tolerance limits.

Introduction:

Brachytherapy has a distinct place in the radiotherapy of malignant tumors, especially for Intracavitary treatment of gynecological cancer and interstitial treatment for prostate, breast, and head & neck cancer. Brachytherapy is considered as an essential part of the treatment for almost all the sites of cancers.[1] Brachytherapy is the treatment of cancer by keeping the source in the proximity to the tumor.

High Dose Rate (HDR) brachytherapy has been widely accepted over the past two decades, particularly for the treatment of gynecological tumors and for tumors at other sites which are not easily accessible for Low Dose Rate (LDR) techniques.[5]

Calibration is the very important step in physical aspects in Brachytherapy. The calculation of dose to a patient depends on the accurate source calibration. The uniformity and precision of the radiation from the brachytherapy source can be greatly affected by the distribution and encapsulation so that sources need to be

measured [8]. It's also very important for proper treatment delivery.

The clinical use of brachytherapy source requires an independent measurement of the air kerma strength or air kerma rate (called dosimetric verification) according to the recommendations of the medical physics societies. For commercial brachytherapy sources, air kerma strength or reference air kerma rate is specified in the source's calibration certificate provided by the manufacturer, typically with an accuracy of ±5%.In the case of larger deviations between measurement and manufacturer specification, the reason for the deviation should be determined. [2] Hence, calibration of brachytherapy source at the user level is necessary not only to check manufacturer stated calibration but to ensure traceability to internationally accepted standards

High Dose Rate (HDR) afterloading brachytherapy is a highly widespread practice today. The most common nuclide used in modern HDR afterloading machines presently is Ir-192, however, use of Co-60 is increasing.[5] These two radionuclides show different physical characteristics. In Ir-192 sources with a nominal activity of 370 GBq. The most suitable half-life of ^{192}Ir source is 73.8 days. The short half-life of ^{192}Ir HDR source requires changing the source at every interval of four months. Nevertheless, treatment times required for 74 GBq Co-60 is only 1.8 times longer than that of a comparable 370 GBq Ir-192 due to the higher air kerma rate constant Γ ∂(around 0.306 μGyh-1 m2/MBq for Co-60 sources in comparison to 0.099-0.11 μGyh-1 m2/MBq for the commercially available Ir-192 sources. [10]The the main advantage of considering ^{60}Co for HDR brachytherapy applications is connected with the long half-life (t1/2 = 5.27 years vs. 74 days) with source exchanges in only intervals of a few years. This may reduce effort and costs for source transport, purchase and disposal and for quality assurance. On the other hand, Co-60 requires increased radiation shielding. The longer useful half-life makes Co-60 sources especially interesting for developing countries.

In this study, IAEA TECDOC 1274, AAPM Report 41, for Germany in DIN 6809-2 in combination with DGMP Report 13 and in ESTRO Physics booklet No.8 are recommended for dosimetric verification of air kerma strength for afterloading sources. While DGMP Report 13 and the ESTRO physics booklet describe measurements using a thimble ionization chamber free in air and in a PMMA solid phantom and using a well-type chamber the other two reports only give recommendations for measurements free in air and with a good chamber. In DGMP Report 13, in IAEA-TECDOC 1274 and in the ESTRO physics booklet are given dosimetric parameters to calculate air kerma rate from instrument reading for the measurement of Ir-192 while in AAPM Rept.41 they are missing. The DGMP[2,3]recommends specially calibrated solid state phantoms which can provide higher reproducibility and better accuracy in brachytherapy source calibration.

A study conducted to compare dosimetric verification of Ir-192 and Co-60 afterloading sources applying all three protocols to measurements with all three methods.

Materials and Method:

Varian ^{192}Ir HDR new design (GammaMed Plus ^{192}Ir HDR 0.9mm Source & BEBIG Multisource ^{60}Co HDR Co-60 A86) were performed this study. Active length, active diameter, external diameter and total diameter is 3.6mm, 0.65mm, 0.9mm, 0.9mm respectively for ^{192}Ir and 3.5mm, 0.5mm, 0.7mm, 0.9mm respectively for 60Co sources. The source was calibrated using two different procedures, one using the recommended well-type chamber, another by using solid phantoms.

Measurement of reference air kerma rate:

The procedure of source strength measurement in the good chamber

The use of a well-type ionization chamber for HDR source calibration is the recommended procedure by IAEA, AAPM and DIN-6809-2 to simplify the calibration process and it has been evaluated by several authors. The well-type re-entrant chamber used for the present study is hermetically sealed and contains pure Argon as the fill gas at a pressure of 23.5 psi. The HDR well-type chamber is placed in the treatment room and connected to a Standard Imaging (CDX2OOOB) Electrometer, connector a transfer tube has been connected to the adapter of the good chamber. The source travels directly inside the adapter without an applicator. The transfer tube is inserted into closely fitting thin walled aluminum tube on the axis until the end of it touches the bottom. This measurement has been done in a minimum scatter environment thus the chamber should at least be 1m from any wall or floor.

The chamber should minimally stay 30 minutes to reach equilibrium with its surroundings before calibration and the temperature to be measured must be for the chamber volume instead of the room temperature. Set up and measurement has been done within a few minutes. Then a plan is imported from TPS to control console.

According to IAEA and DIN protocol

Reference air kerma rate following this formalism [1]

$$K_r = N_{KR} . M_u . k_{Tp} . K_{recom} . N_{elec}$$

Where,

- ✓ K_r = Reference air kerma
- ✓ N_{KR} = Well type chamber calibration factor
- ✓ M_u = Reading in nC
- ✓ k_{Tp} = temperature and pressure correction factor
- ✓ K_{recom} = Recombination losses
- ✓ N_{elec} = electrometer calibration factor

According to AAPM protocol

Formalism for air kerma strength [7]

$$s_k = I . N_e . k_{Tp} . N_{SK} . A_{ion} . P_{ion}$$

Where,

- ✓ s_k = air kerma strength
- ✓ I = experimental values of well type chamber
- ✓ N_e = correction coefficient for the electrometer scale
- ✓ k_{Tp} = temperature and pressure correction factor
- ✓ N_{SK} = ADCL provided air kerma strength calibration coefficient for the wall chamber (for IR-192)
- ✓ A_{ion} = correction for collection efficiency at the time of calibration, from the ADCL calibration report
- ✓ P_{ion} = correction for collection efficiency at the time measurement

Procedure of source strength measurement in solid phantom

The source positioned at the center of the solid phantom (PTW afterloding calibration phantom, Model No:T9193). The calibration ionization chamber (PTW-0902845) is placed with the center of its collecting volume at 8 cm distance from the source.

The ionization chamber is attached with PTW Unidos dosimeter. The source is remotely transferred in the applicator. Readings (M) are taken in Gy /digit after 3 minutes integration time, using a PTW Unidos dosimeter. The reference air kerma rate [cGy/h.m2] can be determined from a dose measurement made by a thimble ionization chamber calibrated in absorbed dose to water for Co-60 radiation.

According to DIN protocol

A formalism for air kerma rate [2]

$$(K_{a,100})_a = \left(\frac{1}{1-g_w}\right) \cdot \frac{\left(\frac{\vartheta_{en}}{\rho}\right)_a}{\left(\frac{\vartheta_{en}}{\rho}\right)_a} \cdot k_{wp} \cdot k_{zp} \cdot k_\tau k_\rho \cdot k_r \cdot k_Q \cdot N_w \cdot M$$

Where,

- ✓ $(K_{a,100})_a$ =reference air kerma rate
- ✓ g_w= Relative energy lost by bremsstrahlung
- ✓ $\frac{\left(\frac{\vartheta_{en}}{\rho}\right)_a}{\left(\frac{\vartheta_{en}}{\rho}\right)_a}$ = mass energy absorption coefficients for air and water respectively
- ✓ k_{wp}= Perturbation factor from water to PMMA
- ✓ k_{zp}= correction factor accounts scattering and absorption effects for the presence of the phantom (= 1.187 for the cylindrical phantom) im comparison of measurement in air
- ✓ k_τ= Measuring time correction of the measurement time T to 60 min
- ✓ k_ρ= Air density correction factor
- ✓ k_r= The inverse square law correction factor $[k_r = (8/100)^2 = 0.0064]$
- ✓ k_Q= Quality correction factor accounts the differences the refenence (Co-60)and measured (Ir-192) radiation quality
- ✓ N_w=Calibration factor for absorbed dose to water for ^{60}Co radiation (mGy/digit)
- ✓ M= Dosimeter reading in nC

Results:

The differences between measured and certified air kerma rates were averaged separately for each protocol. The variance of the measurements additionally indicates the reproducibility of each method. Mean deviations from the certified calibration and the variation of the measurements are shown in Table

Method	IAEA TECDOC-1274		AAPM TG-41		DIN 6809-2	
	Ir-192	C0-60	Ir-192	C0-60	Ir-192	C0-60
Well type	0.31%	-1.65%	0.50%	-0.42%	0.31%	-1.65%
Solid phantom	**N/A**	**N/A**	**N/A**	**N/A**	1.22%	1.76%

The measurements with all protocols and methods showed deviations from the certified specification smaller than about 1.22% for Ir-192 and 1.76% for Co-60-Sources.

The deviations of the measured from the certified air kerma rate are larger for Co-60 (maximum deviation of 1.76%) than for Ir-192 (maximum deviation of 1.22%).

Discussion:

In this paper, Air kerma strength was determined in three protocols (TG 41, IAEA TECDOC-1274 and DIN 6809-2) using the GammaMed Plus ^{192}Ir and ^{60}Co sources in different measurement methods namely: measurement using well ionization chamber and measurement using solid phantom. Three protocols have been modified in two techniques of calibration. In all protocols, the deviation in well chamber measurement is less (0.31%-0.51%) for ^{192}Ir and (-0.42%-1.75%) for ^{60}Co sources.The calibration results of different protocols for different methods are in acceptable limit within ±5% which are recommended

The well-type chamber was placed at a distance of more than one meter from the floor as well as from the walls to have minimum scatter contribution. The well-type chamber behavior and other various factors that influence the result have been determined experimentally.

As fast and accurate measuring equipment, the well-type ionization chamber is simple and reproducible at the clinical level. As positioning errors are less in a well-designed solid phantom it provides a method for monitoring the quality of the source calibration. The solid phantom method is easy to handle but it is only used in Germany.

From all aspects of view well-type ionization chamber based dosimetry system is a reliable tool for the calibration of photon sources. But a solid phantom method can be recommended as a quick check and quality control purposes.

The report DGMP 13 illustrates a good, but an outdated guideline for the implementation of the dosimetry to HDR Afterloading-source, especially with a Krigger phantom, while the international IAEA TECDOC-1274 describes this measurement "free air" and with the good chamber. The Report 41 AAPM of the dosimetry little concrete information for users. In this study, three protocols have been modified in two techniques of calibration. It is recommended that these three protocols have to be updated on a uniform level with the latest version, also as a "Code of practice" and with other nuclides.

At present several national research institutes e.g. from Germany, England, and France under the name EURAMET they have collaborated Project JRP06 Brachytherapy in which new standards for the calibration of brachytherapy source under development. They have started to develop to directly measure the absorbed dose to water surrounding brachytherapy isotopes including Ir-192 at distances of a few cms.

Unlike the majority of other radiation detectors, well-type chambers show only a weak sensitivity dependence on environmental scattering conditions, i.e. on scattering from walls and floor. This is mainly due to the fact that the radionuclide sources are positioned very close to the sensitive volume and also because the outer wall of these chambers is made of metallic materials of much greater thickness than those of conventional compact ionization chambers or of large volume ionization chambers used in the in-air calibration set-ups.

Conclusion:

For remote afterloaders using single ^{192}Ir sources replaced several times yearly, it is most important to develop a consistent, reproducible method of calibration and the uncertainty and reproducibility of the verification measurements should be known and considered when deciding if the verification measurement agrees or disagrees with the manufacturer's stated value. Well-type ionizationchamber and thimble chamber based dosimetry systems both are fast and reliable tools for ^{192}Ir source parameters checking in working brachytherapy department conditions.

Verification of source calibration of Co-60 HDR brachytherapy sources by the clinical use is feasible. Source strength for Co-60 sources can be measured with comparable uncertainty The correction factors to calculate air kerma rate from the reading of calibrated ionization chambers for-60 can be taken from literature. Still, ^{60}Co has been widely deployed in Asia and especially in Japan for the past decades. Since ^{60}Co is also available in a miniaturized form with geometrical dimensions identical to those of ^{192}Ir sources, it seems that there is potential to change market share. However, the higher emitting energy of ^{60}Co photons requires increased radiation protection. The main advantage of considering 60Co for HDR brachytherapy applications is connected with the long half-life (t1/2 = 5.27 years. These obvious logistical advantages and potential savings will encourage other companies to make miniaturized 60Co sources available in the near future.

Accurate determination of the treatment dose for brachytherapy treatment always requires accurate dose calculation parameters. Reference air kerma rate is a key parameter, which is used as input in the treatment planning system for the dose calculation. All the methods of calibration of HDR brachytherapy source discussed in this study are effective to be used for routine calibration purposes with acceptable accuracy.

To make sure proper clinical use with Remote afterloading Brachytherapy for cancer treatment & to maintain upgrade quality assurance procedures by a qualified medical physicist. Checking of source parameters is one of the most important parts of a quality control system in brachytherapy facilities.

With the implementation of these programmes in institutional and national levels in our country, we can significantly improve standards of care for millions of cancer patients in Bangladesh.

At a Glance "3rd International Conference on Medical Physics in Radiation Oncology and Imaging-2018", KIB, Dhaka, Bangladesh.

Karmaker N, Kausar A, Anupama H A

Dept. of Medical Physics and Biomedical Engineering, Gono Bishwabidyalay (University), Savar, Dhaka, Bangladesh.
Bangladesh Medical Physics Society (BMPS), Dhaka, Bangladesh.

Bangladesh Medical Physics Society (BMPS) has organized the "3rd International Conference on Medical Physics in Radiation Oncology and Imaging, 2018 (ICMPROI 2018)" on 10-12 March at Krishibid Institution of Bangladesh, Dhaka, Bangladesh. Co-organizers were Department of Medical Physics and Biomedical Engineering (MPBME), Bangladesh Cancer Society (BCS), Bangladesh Society of Radiation Oncologists (BSRO), Bangladesh Society of Radiology and Imaging (BSRI) and Nepalese Association of Medical Physicist (NAMP). This program endorsed by the International Organization for Medical Physics (IOMP), International Center for Theoretical Physics (ICTP), European Federations of Organizations for Medical Physics (EFOMP),) Deutsche Gesellschaftfür Medizinische Physik (DGMP), American Association of Physicists in Medicine (AAPM), Middle East Federation of Organizations of Medical Physics (MEFOMP), Asia-Oceania Federation of Organizations for Medical Physics (AFOMP). This program divided into the inaugural programme, vendor presentation, plenary & scientific session, poster session, cultural program, poster award ceremony, and valedictory session. Total 400 participants were attended from 22 different countries from Asia, Europe, Middle East and the USA in this conference. For the first time participants from Sri Lanka, Vietnam and Nepal (total 26 participants) were attended in ICMPROI-2018.

The aim of this program was to develop medical physics in the South Asian region, sharing experiences with scientists and to help the medical physics community by collaborative work.

Inaugural Ceremony:

Mr. Zahid Malek, MP (Chief Guest), Honorable State Minister, Ministry of Health and Family Welfare; Md. Habib ur Rahman Khan (Special Guest), Additional Secretary and Ministry of Health and Family Welfare; Prof. Dr. Chop LalBhusal(Guest of Honors),Ambassador of Nepal to People's Republic of Bangladesh; Prof. Dr. KamrulHasan Khan, Vice Chancellor, Bangabandhu Sheikh Mujib Medical University (BSMMU), Prof. Dr. Tomas Kron (International Advisory Member), Director of Physical Sciences, Peter MacCallum Cancer Centre, Melbourne, Australia; Dr. A. K. Azad (National Advisory Member), Prof. Dr. G. A. Zakaria(Patron), University of Cologne, Germany; Prof. Dr. H. Anupama Azhari (Organizing chairperson), Md. Anwarul Islam(President of BMPS) delivered special emphasizing on medical physics and biomedical engineering by their valuable speech.

Fig 01: Inaugural Ceremony, ICMPROI-2018

Scientific Session:

Invited presentations (26), vendor presentations (03), oral presentations (47), poster presentations (31) in different areas such as radiation oncology, radiation protection, treatment planning system, dosimetry, brachytherapy, radiology, molecular imaging, nuclear medicine, imaging and advanced biomedical engineering presented by local and foreign presenters in this program (Fig:02)

Fig-02: Scientific session, ICMPROI-2018

Vendor Presentation:

Three vendors were presented their paper on the modern and updated technology of medical physics from Varian medical systems, Team Best and Elekta.

Poster Session:

Judges selected three best posters based on the evaluation criteria out of thirty-one posters. The title of the poster of the 1st, 2nd, 3rd winners were ("Determination of Effective Dose of Thyroid Gland in Nuclear Diagnostic During Thyroid Scan" by Maryam Mumu), ("A New Approach of Semi-3D Computer treatment Planning Using Plaster of Paries for Breast Carcinoma" by Nazrul Islam) and (" Evaluation of Image Quality in CT Chest by 50% Mass Reduction" by Niranjan Thapa) respectively (Fig: 03).

Fig-03: Poster session

Cultural Programme:

On the 2 day a cultural function (Fig:-04)was arranged by the conference organizer. This program focused on the traditional cultures and life styles of Bangladesh. The participants enjoyed the program followed by grand dinner.

Fig-04: Cultural Program

International Medical Physics Certification Board (IMPCB) Examination:

For the first time in Asia IMPCB examinations (Part I & II) was held in Bangladesh (Fig: 05) after the conference ICMPROI 2018 (13 - 14 March 2018) organized by Bangladesh Medical Physics Society (BMPS).

Fig-05: Participant of IMPCB examination

Meeting with participants of South Asian countries:

Due to development of medical physics and modern cancer treatment, organizing members has been discussed to form a South Asian Federation of Organizations for Medical Physics (SAFOMP) (Fig:-06) with South Asian delegates.

Fig-06: Meeting with participants SA regions

ICTP award:

For the first time, ICTP has given travel award for the OEA countries participants through this ICMPROI-2018. The awardees were selected based on educational background, work experience, the age limit of travel award participants (Fig: 07). Organizing committee selected and distributed this award within 11 participants from different OEA countries.

Fig-07: ICTP travel awardees

Closing Ceremony:

BMPS president, former president, vice president, secretary, and treasurer shared their experience about the arrangement of this international program for inspiring young generation. Local and foreign participants gave their opinion regarding the outcome of the conference (Fig-08). According to the sequence of BMPS activities, next "4th International Conference on Medical Physics in Radiation Oncology and Imaging (ICMPROI)-2021", 26-28 February 2021, Bangladesh announced by the closing ceremony.

Fig-08: ICTP travel awardees

Acknowledgement:

We are thankful to our all BMPS members, local and foreign participants, colleagues, contributors, organizing committee members, co-organizers, sponsors, scientists, researchers, students, and all other people for their support in the ICMPROI-2018.

Internship Through DAAD Scholarship

Rashed Al Amin
Lecturer, Department of MPBME, Gono Bishwabidyalay, Savar, Dhaka.

The internship is made up in the basis of the cooperation agreement between University Medical Center Manheim, University of Heidelberg, Germany and Department of Medical Physics and Biomedical Engineering (MPBME), Gono Bishwabidyalay, Dhaka, Bangladesh. During this three months (from 20th October 2017 to 20th December 2017) internships program I was joined several lectures in Mannheim Medical Centre and joined a MATLAB image analysis project. Besides, the author also completes a training of 3D printer. The total internship period was covered by DAAD scholarship. However, the internship outcomes are very positive for me and also for the Department of the Medical Physics and Biomedical Engineering (MPBME), GonoBishwabidyalay.

The first step of the internship program is to become familiar with the work environment and how it flows. About a week at the beginning of the internship period were spent on only monitoring how the staff around me works and what they work on. However, the responsibilities of joining the lectures are adapt student-oriented teaching-learning methodology, gather more knowledge and observe technology-based teaching. During the first spell of the internship, program author joined the lectures of different courses of Biomedical Engineering.

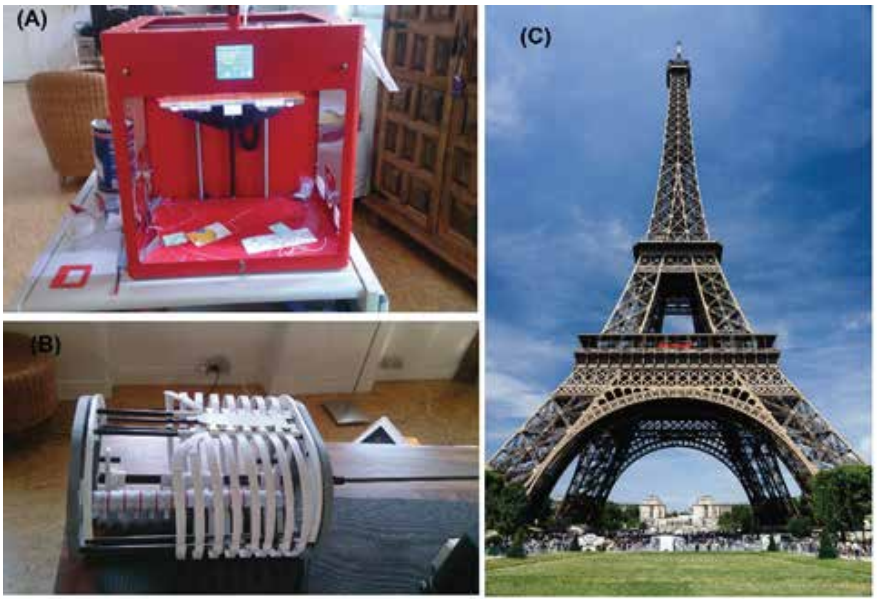


Figure 1: (A) 3D printer, (B) Product made by 3D printer and (C) MATLAB image analysis (Median filter).

In the next step of the internship program, the author joined ITM lab in a MATLAB image analysis project under the guidance of Dr. Irakli Kalichava and Mr. Volker Steil. The MATLAB project contents learning and complete the advanced medical image processing exercises. The project includes, Archive of an RGB and DICOM images, Measures of image quality (Add Gaussian noise, Compute SNR), Smoothing with linear and median filters (Add noises, Smoothing, Compare the results), Intensity transformation, Hit miss transform, Skeleton, iterative denoising (noises, denoising, compare the results), Thresholding (Global thresholding, Local thresholding, Compare the results), Region growing, Point pair matching and Multimodal image registration.

In the next step of the internship author joined in a training on entitled 'Application of 3D printer for biomedical applications'. The training was held on the dose. point GmbH, Wiesloch, Germany, and Department of Radiation Oncology, University Medical Center Manheim, University of Heidelberg, Germany. After completing the learning task successfully, author fabricates a cubic phantom using German RepRap X350 3D printer, Polylactic acid (PLA) as a filament and Simplify3D slicer. However, the fabricated cubic phantoms were good as compared to original cubic phantoms.

The internship at University Medical Center Manheim was very useful to the author in acquiring new Teaching, MATLAB, and 3D printer skills which were completely new for me. These learned skills prove to be very valuable by signifying an impact in Biomedical engineering education. In conclusion, the author is well satisfied with the Internship. The author has learned many new technical subjects, acquired a number of new technical skills and improved another group of existing skills, other than those gained at professions earlier. What author liked most about the internship is that it is very strongly related to academic materials and laboratories which was studied in Bangladesh.

Acknowledgment: The author would like to express sincere gratitude and humble thanks towards Prof. Dr. Golam Abu Zakaria, Department of medical radiation physics, Gummersbach Hospital, Academic Teaching Hospital University of Cologne, Gummersbach, Germany for providing constant support throughout this internship work. In addition to, the author also grateful to Prof. Dr. HasinAnupamaAzhari, Mr. Volker Steil, Mr. Ulf Dudziak and Dr. IrakliKalichava for the helpful discussions and the encouragement provided at all levels of the work. Moreover, the author also thankful to Md. Delower Hossain and Prof. Dr. FrederikWenz for their kind support to make this internship.

Apart from this, Author also very much thankful to Niaz Habib and Arif Md. Imtiaz for their cordial constant support to me at Mannheim. I was learned a lot of real-life experience from that training. Besides, Author enjoyed the German culture and food, Meeting with Adian and traveling to Barcelona and Paris.

Figure 2: Memories from the Germany.

Achievement of Master's Degree in Medical Physics with Distinction in Radiotherapy and Biomedical Optics from Heidelberg University Under PAGEL Project Funded by DAAD

Md. Nazmul Alim

In September 2018, I achieved my M.Sc degree in Medical Physics with Distinction in Radiotherapy and Biomedical Optics from Heidelberg University, Germany. This program was funded by Deutscher Akademischer Austauschdienst (DAAD) under Partnerships for the Health Sector in Developing Countries (PAGEL) project and The Bangladesh Studien- und Entwicklungszentrum (BSEZ). The aim of this project was to promote the education and training of medical physicists in radiotherapy in Bangladesh.

The master's program was run by Medical Faculty Mannheim of Heidelberg University. It was an interdisciplinary course designed to enable graduate students to work in clinical contexts and carry out independent research in the field of Medical Physics. The study period was one year (full time) with 70 ECTS. But in Europe 300 ECTS are needed to get a master's degree along with bachelor degree. I completed total 120 ECTS with 50 ECTS extra to get the master's degree.

The study program was divided into basic, advanced and specialization modules. The first three months of the program covered the mandatory introductory and advanced modules as a basis for subsequent specialization. Two different specialization areas were selectable, radiotherapy and biomedical imaging. I chose radiotherapy. The modules offered biomedical engineering, radiation biology, radiation protection, nuclear medicine (gamma camera, SPECT, PET/CT, molecular radiotherapy), medical imaging (MRI, CT, US), diagnostic and therapeutic radiation, detailed chain of radiation therapy (imaging, treatment planning, use of dose-calculation algorithms, quality assurance methods, technical performance of linear accelerator, etc.), insight into dose-calculation algorithms, and medical image analysis. The specialization modules emphasized programming skills as a binding link between physics and medical research. Besides lectures, in-depth knowledge was acquired in hands-on sessions in different clinical departments.

The faculty has been established excellent teaching methods for example group tasks, presentations, assignments, self-study, answering questions session, daily class tests etc. The class rooms were equipped with modern multimedia facilities such as projectors and sound system. During lab rotations I found that all the laboratories were well equipped with modern instruments and technologies. Library facilities were excellent with a lot of computers, laptops, scanner, photocopy machines, group discussion zone and online searching facilities. It was equipped with a great and latest collection of scientific journals, magazines, newsletters and books.

Heidelberg University is the oldest university in Germany with culture on every corner. There are more than 20 museums, 5 playhouses and historical Churches. In Heidelberg one of five residents is a student. Many graduates stay on to work at the many prominent international research centers in this city such as Max Planck Institute and German Cancer Research Center (DKFZ).

During study period I got several opportunities to attend many workshops, conferences and winter school. I attended on a winter school in Pichl, Austria on 'Medizinische Optik' funded by Heidelberg Engineering. I could learn a lot about the recent innovations in medical optical devices from that workshop. I got an opportunity to attend a workshop on 'Nanoscopy' in Mainz. There I observed the technology of Super Resolution Microscopy which got Noble prize in 2014. A conference was held in Mannheim on 16-19th June, 2016 titled '22 Jahrestagung der Deutschen Gesellschaft für Radioonkologie'. I presented a poster on 'Present status of Medical Physics in Bangladesh' during poster session.

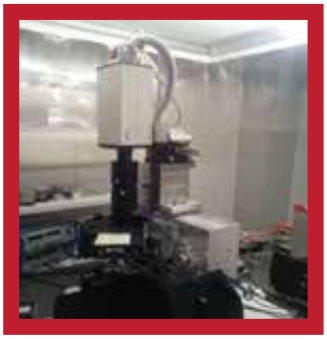
There is a Bangladeshi community lives in Mannheim. They get together in various occasions like Eid-ul-fitr and Eid-ul-Adha. Sometimes they arrange cricket and football tournaments with other cities.

Poster presentation

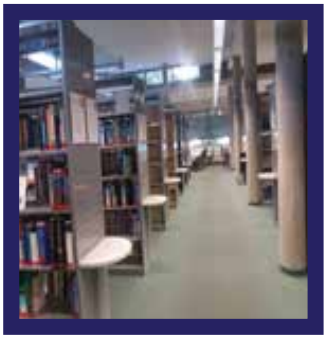
Bangladeshi community in Mannheim

Some participants of Winter school in Pichl

University Medical Center of Mannheim



Super Resolution Microscopy Lab in Mainz



Library of medical faculty Mannheim

Report on DAAD scholarship (PAGEL Project) and Experience of M.Sc in University of Heidelberg, Germany

Rahnuma Nur Nawrin
M.Sc in Medical physics, University of Heidelberg, Germany

This is a comprehensive report on German Academic Exchange Service (DAAD) scholarship-2016 under PAGEL project and my Masters study in Department of "Medical Physics with Distinction in Radiotherapy and Biomedical Optics" at the University of Heidelberg, Germany. I completed my B.Sc in Medical physics from Department of Medical Physics and Biomedical Engineering, Gono Bishwbidyalay, Savar, Dhaka, Bangladesh. By the grace of Almighty Allah I achieved highest CGPA in my Bachelor degree and selected for DAAD scholarship under the collaboration between Gono Bishwbidyalay and University of Heidelberg to pursue my M.Sc in "Medical Physics with Distinction in Radiotherapy and Biomedical Optics". I started my study on 1st September 2016 which was a one year M.Sc program.

Heidelberg University is a public-research university in Heidelberg, Baden-Württemberg, Germany. It was founded in 1386 and it is the Germany's oldest university and one of the world's famous and oldest surviving universities. "Medical Physics with Distinction in Radiotherapy and Biomedical Optics" is a Department under the Medical Faculty Mannheim.

The study programme is divided into basic, advanced and specialist modules. In my point of view, the most important thing is, the course curriculum is designed with many practical classes at highly advanced labs and institute. Almost every theoretical class had practical part which enriched my knowledge of medical physics study. Moreover, I also got chance to do some advanced level practical work (DNA damage, cell culture and cell survival curve etc) that are not available in Bangladesh due to lack of highly advanced and expensive technology.

I completed my thesis on "Application of independent organization of multimodal DICOM data in Radiation Therapy" at University Medical Center Mannheim, Germany under supervision of Mr. Volker Steil, Chief Medical Physicist, Department of Radiation Oncology, University Medical Center Mannheim. It was a great opportunity for me to work with such an experienced and knowledgeable mentor. This is also to mention that in my thesis work I have opened a door for Medical Physics student to do research on DICOM data transfer with Radiotherapy PACS and individual computer with the help of opensource freeware software (Conquest DICOM Server and Dicompyler).

Not only in academic study but also I got many valuable experiences during my stay in Germany. In my masters course there were students from more than fifteen countries. I had a very friendly relationship with them and got divergent experiences. Outside the class I met many different people from different countries and learned many things from them which opened out my perspective of life.

I would not miss the opportunity to express my heartfelt gratitude to Dr. Golam Abu Zakaria, Professor and Chief Medical Physicist, Academic Teaching Hospital of the University of Cologne and pioneer of Medical physics in Bangladesh and coordinator of international cooperation of this project, without him this journey might not be complete. He has always given me academic guidance, moral support and also encouraged me to work harder which led me to the success. I would also like to thank Prof. Dr. Hasin Anupama Azhari, Dean,

Faculty of Physical and Mathematical Sciences and Chairman, Dept of Medical Physics and Biomedical Engineering (MPBME) Gono Bishwabidyalay (University), Savar, Dhaka, Bangladesh for her kind support and assistance. I would like to convey my earnest gratitude to my thesis supervisor Mr. Volker Steil. He helped me in every critical situation that I faced in my stay in Germany. I would like to thank every member related to this collaboration and every person who has helped me in this journey.

Finally, I would like to take this opportunity to thank the PAGEL project authority for awarding me the German Academic Exchange Service (DAAD) scholarship-2016. I am also thankful to Bangladesh Studien- und Entwicklungszentrum (Bangladesh Study and Development Center) for their financial support and co-operation. I believe, I would be able to serve my country with my gained knowledge and experience from my achieved degree. For a country like ours, the collaboration and support that is being given by PAGEL project is deemed essential for creating skilled manpower in the field if Medical Physics and Radiotherapy. I am looking forward to continued support from them and I hope more students from Bangladesh will get the opportunity like me.

CONTINUOUS PROFESSIONAL DEVELOPMENT

BMPS

College on Medical Physics: Applied Physics of Contemporary Medical Imaging Expanding Utilization in Developing Countries

Mr. Md Akhtaruzzaman

Mr. Md Akhtaruzzaman, the Vice-President of Bangladesh Medical Physics Society (BMPS) attended the College on Medical Physics: Applied Physics of Contemporary Medical Imaging Expanding Utilization in Developing Countries, 27-August - 14 September at the Abdus Salam International Center for Theoretical Physics (ICTP), Trieste, Italy.

Medical Physics knowledge in contemporary medical imaging equipment is becoming an increasingly critical need. This is because of the complexity of modern medical imaging procedures, which require specific optimization in producing the optimal image quality with minimal patient dose.

The Medical Physics College focuses expanding the utilization of applied physics concept and methods of contemporary medical imaging in developing countries by providing scientists and students with high-level education and practical training on the clinical use of this equipment, description of relevant physics, and reference materials use.

The College faculties were highly experienced with international reputations in the field of education and training in medical physics. The 3-week intense program was included classroom presentations, supported with clinical practicums and computer simulations. The College were also included specific professional activities and advice on setting up professional programs in their departments and hospitals.

Voice of BMPS

IAEA Regional Training Course on Image Guided Brachytherapy and 3rd FARO Annual Meeting in Bali Island, Indonesia

Safayet Zaman

Participants of the training course

International Atomic Energy Agency (IAEA) organized the Regional Training Course on image guided brachytherapy (IGRT) from 4 to 8 September 2018 in Bali Island, Indonesia in cooperation with the 3rd Federation of Asian organizations for Radiation Oncology (FARO) Annual Meeting from 6 to 8 September 2018.

More than 32 participants from 16 Asian countries took part in the IGBT training course. The mentors who have taken the courses were from the IAEA, Indonesia, Japan and India. I have participated there as a medical physicist from Dhaka Medical College Hospital (DMCH) along with a radiation oncologist from BSMMU, Dhaka, Bangladesh. In the training the speakers have discussed about the latest procedures of different brachytherapy done with the help of image guidance from CT, PET-CT, MRI, Ultrasound etc. The participants have shared their own experiences of IGBT. The idea of this training course was to distribute the knowledge and materials to the participants and they will do the same in their own respective country and thus distributing the knowledge over a wider range.

Apart from the scientific training course all the participants got the chance to taste the flavor of the wonderful Bali Island by having an invitation from the Governor of Bali Island for a cultural dinner, a beach dinner and a half day tour to different beaches and temples around the Island. The host have represented their Island in their own traditional dances and music in the cultural shows.

This year the Bali Island, Indonesia hosted the 3rd FARO Annual Meeting and many radiation oncologists, medical physicists and people in this field from across the world participated.

Participants of the training course

The 5th GI-CoRE Summer School for Medical Physics

Mr. Md Akhtaruzzaman

Mr. Md Akhtaruzzaman, the Vice-President of Bangladesh Medical Physics Society (BMPS) attended the 5th GI-CoRE (Global Institution for Collaborative Research and Education) Summer School for Medical Physics, which was jointly conducted with Medical Physics School offered by Hokkaido Summer Institute (HSI) between 6th - 10th August 2018 at the Hokkaido University, Sapporo, Japan. This year, the Summer School and HSI welcomed 21 participants from 12 different countries: Bangladesh, China, Ghana, India, Italy, Japan, Malaysia, Pakistan, Philippines, Singapore, Turkey and USA. HIS - Medical physics school- was open for graduate students, whereas the GI-CoRE summer school was open for early career researchers such as assistant professors, lecturers, researchers, radiation physicists and medical physicists.

Participants had the opportunity to learn from the world's leading researchers and enjoyed interactive sessions. In addition, they all presented their current scientific works as oral presentation. Moreover, they had the chance to visit the Proton Therapy Center and Real-time Tumor Tracking (RTTT) radiotherapy facilities available at the Hokkaido University Hospital.

All the participants successfully completed the course and were awarded a certificate of completion on the last day of the course.

Participants of the 5th GI-Co RE Medical Physics Summer School

Hands-on Training on "Quality Control of Mammography and Fluoroscopy"

Dr. Kumaresh Chandra Paul

In cooperation with Department of Medical Physics and Biomedical Engineering (MPBME) and Bangladesh Medical Physics Society, a hands-on training was held entitled " Quality Control of Mammography and Fluoroscopy" at Ahsania Mission Cancer and General Hospital (AMCGH) on 30 June 2018. The training was conducted by Dr. Kumaresh Chandra Paul, Assistant Professor, Department of MPBME, Gono Univesity. The training session covered by welcome speech, the day-long practice session with participants, open discussion and closing program. At the end of the training, the participants were learned about QC on mammography and fluoroscopy, machine components and practical clinical application of both machines.

The two days long (20-21 August 2018) third hands-on seminar (HS-03) " Application and Quality control on Computed Tomography (CT)" conducted by Associate Prof. Dr. Katsumi Tsujioka, and Mr. Kyohi Yamada, faculty of Radiological Technology, Fujita Health University, Japan. The training venue was Square Oncology and Radiotherapy Centre, Square Hospital Ltd. This training program jointly organized by the South Asia Centre of Medical Physics and Cancer Research (SCMPCR), Gono University and Square Hospitals Ltd.

Report on "The Annual Conference of the Association of Medical Physicists of India - Western Chapter - 2018(WC – AMPICON 2018)" in Ahmedabad, Gujarat.

Ms. Kazi Towmim Afrin

Medical Physics profession is now in the crossroads and the role of medical physicist has elevated in recent times to management and administration. World Health Organization implies the need for the medical physicist in negotiation and supervision of maintenance of equipment. Every year AMPI has been organized the annual conference. So successively this year also they organize the program as "The Annual Conference of the Association of Medical Physicists of India - Western Chapter - 2018(WC – AMPICON 2018)" is organized by Sterling Cancer Hospitals, Ahmadabad on June 2nd -3rd at Courtyard by Marriott Ahmedabad, Ramdev Nagar Cross Road, Ahmedabad, Gujarat 380015. The theme of the conference was "Redefining the Role of Physicists in Modern Healthcare".

Bangladesh has been introduced in the western chapter for the first time. Two representatives from Bangladesh as well from Gono University, Dr. Kumaresh Chandra Paul and Ms. Kazi Towmim Afrin (Me) have joined in the conference.

First Day 2nd June: In the 2nd June I have reached the conference venue the little bit late around 10.00 am as because my auto-car driver could not identify the address and took me in the wrong place but finally I was able to find the venue. There was no conference banner in front of the venue. Fortunately, the program was delayed due to some flight schedule of different Medical Physicist and the inaugural session was started at 11.00 am instead of 09.00 am

The conference was inaugurated by the chief guest Dr. Avinash U. Sonawane (Fig-1) who was the head of regulatory authority of radiotherapy, India and as a patron Shree Girish Patel. Many speakers from India and abroad ware present their scientific work. On the first day, the program was compiled with 22 scientific presentations. Dr. A.U. Sonawane and D.D Deshpande of TATA Memorial Hospital, Mumbai delivered their invited talking the first session on "Recent Regulation and Challenges in Radiotherapy and QA of imaging Equipment in Radiotherapy respectively".

(Fig-1)

(Fig-2)

Dr. D. Datta, RP & AD, presented excellent work over "Machine learning oriented model-based dose calculations algorithms in 3DCRT and IMRT". Dr. S. D. Sharma from RP & AD, Mumbai mentioned the "Highlights of Recent IAEA Code of Practice for Dosimetry of Small Photon Fields" and From AERB, Mumbai presents elaborately about "Shielding requirements of Halcyon".

After the first session we have met with conference secretary Mr. S. Senthikumar and conference Chairperson Mr. Arun Shiva. They welcomed us and as I was a guest speaker they waived my registration fees and gave me the registration kits. They were very pleasant and cooperative.

After tea break Dr. Jamema from ACTREC, Mumbai gave an excellent talk over the "Implementation of ICRU-89 Recommendations".Dr. Rajesh Kinhikar had presented about "QA of SBRT Process". After that, the rest of scientific talk was on Imaging and Dosimetry presented by the different physicist from a different state on India. That time I have conducted with AMPI secretary Dr. Shova Jayaprakash and discussed with her about our present status medical physicist of Bangladesh and we need their cooperation for developing the quality of medical physicist and provide the training program to our new project South-Asia center for Medical Physics and Cancer Research (SCMPCR). She was very interested and assure that they will cooperate us.

During lunch, we have met different physicists from western chapter including Dr. S. D. Sharma, Dr. Jamema (Fig-3) and interchange our experiences with them. The whole teams of medical physicist were present from HCG hospital (Fig-4). They were very friendly and cooperative. I have met that time with Dr. Rahul Umbarkar from Varian Medical Systems International, India. There was no stall from vendors and as well sponsors. We have met with the joint secretary of this conference Ms. Shatabdi Chakraborti (Fig-5).

After lunch, Mr. Greg Robinson, Medical Physicist, Sun Nuclear, USA delivered his talk on "Future of Patient Specific QA in Radiotherapy- Automation and In-Vivo Dosimetry using Perfection 3D". Later on, Rest of the medical physicist was presented their scientific talk on SBRT, Brachytherapy, Dosimetry, and QA protocols.

In the Afternoon session, I had presented Bangladesh has presented my talk on "Present Status of Medical Physics Education, Profession and Career for Women in Bangladesh": Problems and Perspective. In this talk, the total medical physics scenario has been presented in front of the western chapter of AMPI. Organizing Committee has put this topic into the best paper award categories.

(Fig-3)

(Fig-4)

(Fig-5)

After this session, Grand Dinner has been arranged in the venue. The dinner was very nice including all Gujarati foods, vegetables, soup, and dessert items.

Second day on 3rd June: The second day was scheduled as the "First user experience with a new Generation Single Energy Linear Accelerator with Highly Advanced Delivery Capabilities- South East Asia's First Varian Halcyon at Sterling Cancer Hospitals" which was delivered by Mr. Arun Shiva after breakfast.

During the tea break, we have discussed with Sun Nuclear representative Mr. Ravi Saini, who is the regional manager from Australia and Mr. Greg Robinson medical physicist from the USA to arrange some workshop in Bangladesh regarding dosimetry. They were interested and agreed to arrange such kind of workshop (Fig-6).

After this session and before entering the workshop the organizing committee gave a crest to me (Fig-7) for my

talk and also to Mr. Kumaresh Chandra Paul was honor by the nice crest. And then the best paper was announced and two papers were selected. They also gave me the certificate for the guest speaker (Fig: 9).

During the conference, there was an open discussion on the different problem which is facing the physicist now a day. In that session, M.Sc students of medical physics and fresher medical physicist ask questions to the senior physicist Mr. Yogesh Ghadi, Mr. Mahendra More & Mr. Anand Jadhav and they gave the instant answer. That session was very interactive and was very helpful for the new generation physicists as well us also.

(Fig-6)

there was also a live demonstration on "Patient-specific QA using a true 4D array device –Sun NuclearArc Check-Setup"and"QA process for a new generation fast delivery Halcyon Linear Accelerator" and Setup, Profile Measurement and Analysis of FFF beam in Halcyon Using an Automated Radiation Field Analyzer-PTW BEAM SCAN and Comparison of FFF profiles in Halcyon and True beam Linear Accelerators- Clinical Impact and Dosimetry".

Finally, the memento was given to the whole organizing committee and the session was concluded with the vote of thanks to the sponsors and other technical supports by the organizing chair Mr. Arun Shiva.

The hands-on treatment planning workshop on RDS Rapid Arc Treatment Planning for dual Layer MLC Linear Accelerator using Varian Eclipse V15.5" was held after the lunch.

In conclusion, by attending this conference I have gathered knowledge on dosimetry, QA practices and the regulation process of radiotherapy. I have learned about the commissioning process of Halcyon and the dosimetric comparison with True Beam.

(Fig-7)

(Fig-8)

(Fig-9)

Clinically we have learned the Progressing medical physicists beyond the conformance-based technology-care provider to the scientific, quality-bound healthcare provider. Scientifically we have gathered knowledge about the models of scientific excellence and innovation in all domains of medical physics in recognition of its

interplay with associated disciplines. We have learned the updated and enhanced teaching skills to empower and to improve human health around the world. The live workshop was very good which I can share this experiences with the students of the Department of Medical Physics and Biomedical Engineering and hopefully exchanges my knowledge with them. Through this conference, we have succeeded to make a connection with AMPI WC with Bangladesh. I have exposed with the culture of Gujarat as well West of India.

Acknowledgment: First I acknowledge to Prof. Golam Abu Zakaria sir and Prof. Dr. Hasin Anupama Azhari for selecting me for this workshop. I acknowledge to DAAD financial support for joining the conference. I also acknowledge to the department of medical physics and biomedical Engineering, Gono Bishwabidyalay for giving me the opportunity and supporting me with all necessary documents.

Training Program: Elekta Medical System India Pvt. Ltd

K. M. Masud Rana

BMPS Executive member, K. M. Masud Rana participated training program provided by Elekta Medical System India Pvt. Ltd from 07th -12th January 2018 in New Delhi, India. The training title was "Oncentra Brachytherapy Application Training".

The training includes the following:

- Overview of the different types of Brachytherapy application for cancer treatment
- Demonstration of the treatment unit configuration in the treatment planning system
- Knowing about different planning techniques

Continuous Professional Development (CPD)" Initiative of Bangladesh Medical Physics Society (BMPS)

Md. Anwarul Islam

For promoting medical physics education, training and providing quality service in all aspects of medical physics, a society called "Bangladesh Medical Physics Society" (BMPS) has been formed in 2009 which is registered by the Government of Bangladesh. BMPS is also officially recognized as an affiliated member by the Asia-Oceania Federation of Organizations for Medical Physics (AFOMP) and International Organization for Medical Physics (IOMP). BMPS regularly organizes national and international seminars, conferences, workshops in cooperation with the relevant international organizations. The total number of member of BMPS is more than 250 including associate and promoting members and gradually increasing every year. BMPS is pursuing a public awareness program for dissemination of the role of medical physicists all over the country.

For professional development, BMPS organized hands-on training programs on different topics. The main objectives of this training program are to develop clinical knowledge and views in the field of radiotherapy. We already successfully completed several hands-on training programs.

At 18 June 2016, the first training on "Introduction and familiarization of Eclipse Treatment Planning System by making simple 3DCRT and IMRT plan". This hands-on training program is jointly conducted by Md. Anwarul Islam, Coordinator Medical Physicist, Square Hospitals Ltd, and Md. Safayet Zaman, Medical Physicist, Dhaka, Medical College Hospital. The training venue was Treatment Planning System (TPS) lab of Medical Physics and Biomedical Engineering, Gono University.

The same year, 30 June, Mr. Kumaresh Chandra Paul, President of BMPS (2014-2016) "Quality Control of Mammography and Fluoroscopy" showed at Ahsania Mission Cancer and General Hospital (AMCGH)

A hands-on training on the topic of " Treatment Planning System (TPS) and QC of Imaging" is organized at 2nd February 2017 at the TPS lab of Medical Physics and Biomedical Engineering lab, Gono University. Md.Akhtaruzzaman, Vice President of BMPS, Medical Physicist, Ahasania Mission Cancer, and General Hospital, was the trainer.

Two weeks apart the same training is continued by Md. Faruk Hossain, Medical Physicist, United Hospitals Ltd.

Mr. Md. Anwarul Islam, President of BMPS proposed to organize hands-on seminar officially at the post ICMPROI-2018 meeting. In the meeting, everybody is agreed to organize hands-on seminar (HS) three months apart round the year.

The 20 April 2018, the first hands-on seminar (HS-01) was conducted by Md. Anwarul Islam, President of BMPS and Coordinator Medical Physicist, Square Hospitals Ltd. The title of the training was "Radiotherapy Treatment Plan Evaluation on the basis of Physical and Biological Aspects". Around 25 participants were presented from different hospital and university.

Report on Attending the Conference of WC-AMPICON-2018 and Workshop at Ahmedabad, Gujrat 380015

Dr. Kumaresh Chandra Paul

Preparation and Travel to the conference venue:

An application was submitted for Indian visa on 19th May and the visa was delivered duly on 29th May 2018. The air tickets (Dhaka-Kolkata, Kolkata- Ahmedabad and Ahmedabad-Kolkata) were purchased on the same day. On 1st June I started for Kolkata and again started for Ahmedabad according to the flight schedule. It was supposed to be reached by 7:30 pm at Ahmedabad, but there was a problem with an aircraft in the runway at Ahmedabad on that day. A tire burst was happened in the runway and there was a blockage in the runway. Our plane was diverted to Joypur and waited there for one and half hours. The 'Go' Aircraft reached at Ahmedabad at 12:30 am on 2nd June 2018. I reached a hotel named Pristine Residency in the airport circle of Ahmedabad by auto car. In the morning on 2nd June 2018 I started for conference venue at 8:0 am the distance was 25 kilometers from the hotel.

First Day: On 2nd June 2018 at the conference:

I reached at the conference venue at 8:40 am from hotel 'Pristine Residency Pvt. Ltd.' by an auto car. I was surprised as because there was no banner at the front gate of the venue. It was very hot day, the temperature was 46° C. I entered into the 'Courtyard by Hotel Marriot, Ahmedabad' and asked for the conference place. It was arranged at the basement of that hotel. After reaching there I did the registration procedure and got the delegate ID card. They did not give me the money receipt as because they did not have it at the registration desk. They promise me it will be provided soon. I was waiting for Ms. Kazi Towmim Afrin (Supti) and by this time took my breakfast. There was no meat product in the brake fast. I was informed that this city is fully free of meat food. There will be no meat product in any hotel also. Supti was delayed to join at the conference (figure-1b). The inauguration (figure-1 a) was started about 11:00 am.

The chief guest was Dr. Avinash U. Sonawane, who is the head, Director of regulatory affairs & Communication Atomic Energy Regulatory Board. Dr. A. U. Sonawane and Dr. D. D. Deshpande of Tata Memorial Hospital, Mumbi delivered their invited talk in the first session on 'Recent Regulation and Challenges in Radiotherapy' and QA of Imaging Equipment in Radiotherapy respectively. Both the presentation were very important regarding the regulation and QA practice in radiotherapy in India.

Figure-1: a) Inauguration, b) Dr. Kumaresh Chandra Paul and Ms. Kazi Towmim Afrin attending the conference from Bangladesh and c) Meeting with Conference chairperson and two physicists (Yatrik and V. Giri) of HCG Cancer Center, Ahmedabad.

After tea brake there was a good presentation on "Machine Learning Orientated model based dose calculations in 3D-CRT and IMRT" by Dr. D. Datta, RP & AD, Mumbai. This Monte Carlo based dose calculation was elaborately presented and discussed. This type of work can be initiated at the department of Medical Physics and Biomedical Engineering (MPBME) with some training and availability of the code for the study. In between the scientific session I met K. V. Balaji, regional manager-sales of Ktpl Kirloskar Technologies (P) Ltd; Dr. Rahul Umbarkar of Varian Medical Systems International, India. There was no stall of any vendor at the conference place. Supti and I met Mr. Senthil Kumar S organizing secretary, chief medical physicists of Sterling Cancer Hospital (Co-sponsor of the conference) and Mr. Arun Shiva Balasubramanian, organizing chairperson. They welcomed and thanked us to join the conference from Bangladesh. We had a discussion on the initiative for the common forum of medical physicists in south Asian countries with Dr. Shobha Jayaprakash, AMPI secretary, Mr. Satish Pelagade, Medical physicists of Gujrat Cancer & Research Institute, Ahmedabad, also the AMPI Secretary of western chapter and Mr. Senthil Kumar. Mr. Satish asked me AFOMP and other forum also there why one more? It was mentioned the successive three international conferences how we approached the issue and mentioned the news letter of AFOMP 2018. We had a very effective conversation regarding the issue. Dr. Shova also told us that she uploaded it to the website of AMPI. Finally every one thanked our initiative wished for the success. We were looking for Sun Nuclear people on that day but it was not possible to sit with them on the first day. During Lunch time we met many other medical physicists at the conference including Dr. D. D. Deshpande and Dr. S D Shama. I met Yatric, V. Giri (figure-2 c) and their team of HCG Cancer Center, Ahmedabad, Gujrat.

In the second session the scientific program was delayed and I visited the HCG cancer Center and arranged my accommodation for the day. It was 13 Kilometers away from the conference

venue. This Cancer Center has tomotherapy facility also. They also agreed to take our students (two to three at a time) for the training if we take permission from their chief Mr. T Saminathan (samimsc2008@gmail.com , Mobile: +918980646652). I took a Hotel Regent near to HCG Cancer Center, Sola Brridge area, Ahmedabad. Then I joined the second session. In the oral presentation there was a competition among the presenters. I enjoyed all the presentation including Supti's one. Supti was excited after the presentation. She asked me about her presentation. The result was announced in the next day.

The dinner was arranged with completely vegetable and very simple one including sweets and cakes. After enjoying the dinner we returned back to our respective hotels.

Second Day: On 3rd June 2018 at the conference:

I join about 9:00 am to the conference. Both Supti and I took breakfast and joined the conference. Around 10:40 am the live demonstration workshop was started. Before beginning the workshop the organizing committee handed over the crest to Supti for the presentation. They also showed their honour to me with a crest (shown in the figure-2 a) because this is the first time delegate from Bangladesh has joined to their western chapter conference of AMPI. It was exciting for me also. The figure-2 (c) showed the picture.

Figure-2: a) Crest, b) Meeting with SunNuclear, c) Crest giving by Dr. Shobha Jayaprakash and d) Certificate of perticipation

The first workshop was on the real time answering the question from Dosimetry, Treatment Planning and Imaging of radiotherapy. Few questions were set previously and three practicing medical physicists were on the dais for answering the raised questions. All the questions were on treatment planning, dosimetry and imaging. It was very good initiative for the organizing committee and helpful for the student those who are doing M. sc in medical physics and newly appointed medical physicists. We can arrange this type of live workshop at our department so that fresh M. Sc and the newly joined medical physicists can be benefited. We (Supti and I) arranged a meeting with Sun Nuclear Corporation people. Mr. Ravi Sani (Australia), regional manager-Asia Pacific and Mr. Greg Robinson (USA), medical physicist showed their interested to cooperate our proposed South-Asia Center for Medical Physics and Cancer Research (SCMPCR) training institute at Dhaka, Bangladesh. Both of them were found dynamic,

friendly and cooperative. They requested us to inform them whenever we arrange any hands-on training or workshop they are interested to cooperate us.

In the live demonstration workshop on "Setup Profile Measurement and Analysis of FFF beam in Halcyon Using an Automated Radiation Field Analyzer-PTW BEAMSCAN" they tried to show the setup but as because of time consuming it was set previously and shown through online procedure. The internet connection was not at the expected level. Therefore, they skipped the setup and scanned with the beam and showed the beam profile and describe the dosimetric comparison for FFF profile in Halcyon with True beam Linear Accelerators.

One more live demonstration was performed on "Patient Specific Quality QA using a true 4D Array Device-SunNuclear ArcCheck-Setup and QA process for a new generation Fast delivery Halcyon Linear Accelerator". I could not understand all the procedure clearly, may be due to lack of less clinical exposure to the treatment planning. In the closing session they made a photo session including us but it was not possible to get those photographs yet.

In conclusion attending this conference has enriched me in different knowledge on dosimetry, Quality Assurance, Imaging and the Regulation of radiotherapy. This opportunity helped me to represent Bangladesh in the conference. It also helped to establish the communication with the western chapter of India. In addition I

exposed to the new idea of live workshop arrangement and new culture of Ahmedabad, Gujrat, India. This experience will definitely help me to guide or teach our student at the department. The students of the department and medical physics community could be benefited with this experience.

Acknowledgement: I acknowledged DAAD financial support for joining the conference. I also acknowledged the department of Medical Physics and Biomedical Engineering MPBME) of Gono Bishwabidyalay for giving me the opportunity and supporting me with all necessary documents for travel to the conference.

NEWS & EVENTS

BMPS

Participation of Breast Cancer Awareness Month (BCAM); October 2018

Breast Cancer Awareness Month (BCAM), is an annual international health campaign organized by major breast cancer charities every October to increase awareness of the disease and for research into its cause, prevention, diagnosis, treatment, and cure. This year Bangladesh medical physics society (BMPS) has organized a breast cancer awareness program on 31st October 2018 in "Glorious school and college" Joypura, Dhamrai, Dhaka. This awareness campaigns of BMPS intend to educate about the importance of early screening, test and more. This program was presided by Mr. Anwarul Islam, President of BMPS. The keynote speaker was Prof. Dr. Hasin Anupama Azhari, founder president of BMPS. The general secretary, joint secretary, treasurer, and executive member were present there. The students came along with their parents in this program. The elaborate program covered aspects like: Probable Symptoms that cause breast cancer, ways to identify it in early stages, the factors causing cancer, self-examination of the breast was demonstrated by the keynote speaker which was very fruitful for the female participants.


Breast cancer awareness program: Speakers and participants

Participation of Bangladesh Medical Physics Society (BMPS) Members in Bangladesh International Cancer Congress (BICC); October 2018

Oncology club, Bangladesh arranged a conference entitled 'Bangladesh International Cancer Congress (BICC) 2018' on 26-27th October 2018 at Army Golf Club in Dhaka. On that conference doctors, oncologists, medical physicists, and radiotherapy technologists participated. Presentations from leading experts, oral and poster sessions were provided delegates with information on the latest developments in the field of cancer treatment. A special young investigator's session and interactive session on different common cancers of the region of Bangladesh were arranged in this conference, covering an array of special topics of great interest to young investigators. About 25 medical physicists from BMPS participated in this conference. The conference committee organized a parallel session on 'Medical Physics and Radiation Technology' where the chairpersons were Professor Sadiq R. Malik, Professor K.S Rabbani and Rapporteur was Dr. Rukhsana Rabbani Dina. In this session, all Bangladeshi speakers were from the department of medical physics and biomedical engineering, Gono University. In the poster presentation session, there were three presenters from Gono University. Every BMPS member who attended the conference shared their knowledge and views in such a big platform.


BMPS members in BICC 2018 during presentations

Breast Cancer Awareness and Survivor Program at Square Hospitals Ltd; October 2018.

October month is celebrated as Breast Cancer Awareness Month worldwide. Square Oncology & Radiotherapy Centre organized Breast Cancer Awareness and Survivor program at 21 October 2018. Around 100 cancer survivors and 100 Hospital staffs are attended in this awareness program. Prof. Syed Md. Akram Hussain, Coordinator Consultant and chief of organizer inaugurated the session with a presentation. Prof. Dr. M. A. Hai, Professor and Director, Bangladesh Cancer Society Hospital & Welfare Home and Prof. Dr. Md. Moarraf Hossen, Director, NICRH deliver a short lecture regarding awareness and gave the answer of different questions from the audience. Md. Anwarul Islam, Coordinator Medical Physicist and President of BMPS participated and play active role to organize the program.

Breast Cancer Awareness and survivor program at Square Hospitals Ltd.

First BEAMSCAN™ Dosimetery System Installed In Bangladesh; October 2018

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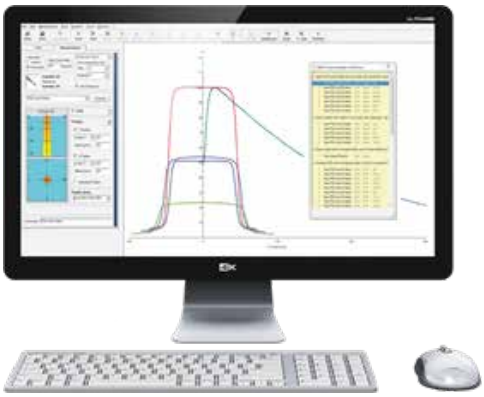

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Training On "Dosimetry and Treatment Planning" October, 2018

Cancer, also called malignancy, is an abnormal growth of cells. There are more than 100 types of cancer, including breast cancer, skin cancer, lung cancer, colon cancer, prostate cancer, and lymphoma. Symptoms vary depending on the type. Cancer treatment may include chemotherapy, radiation therapy, and/or surgery.
The South Asia region with its eight countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka) has approximately one-fourth of the worlds and 40% of Asia's population. With their total population of more than 1,500 million, make up the subcontinent of South Asia. There are 13 million cancer patient in Bangladesh and 1.5% patient dead each day. For the accurate and precise quality of treatment we need skilled manpower for cancer treatment. Cancer is already a major problem and there are general similarities in the prevalence patterns. Coordination of activities within South Asia is a high priority for cancer control in the region.
There is an initiative to make a forum for the medical physicists of the South Asian countries to improve the educational and professional cooperation named South Asia Centre for Medical Physics and Cancer Research (SCMPCR).
The motto of SCMPCR is to train all medical physicists, medical doctors, engineers, technician, nurse and all

cancer treatment related professionals so that this manpower will play the main role to meet the challenge of 21 century's medicine especially for an advanced cancer treatment in Bangladesh. Thus we can build-up an international standard Institute in medical physics and biomedical engineering field in Bangladesh.

Considering the urgent need of qualified manpower SCMPCR has arranged their second hands-on workshop titled "Dosimetry and Treatment planning" was held on 4th to 6th October 2018 at SCMPCR conference Center and Ahsania Mission Cancer and General Hospital. The other co-organizers are Department of Medical Physics and Biomedical Engineering (MPBME), Gono University and Bangladesh Medical Physics Society (BMPS). The participants came from Bangladesh, India, Nepal, Bhutan, and Sri-lanka. Total 30 participants have attended the workshop including 15 foreign and 15 local participants.

Inaugural ceremony.

The program was divided by lecture and practical session. The trainers were Prof. Dr. Golam Abu Zakaria and Prof. Frank Hensley from Germany and Mr. K. Kanakavel and Mr. Sujit Debnath from PTW (India). The training has emphasized the dosimetry and treatment planning which will be supportive for the medical physicist that might open a new era in cancer in Bangladesh.

The 3rd Young Scientist Congress "Challenging Researcher by Young Scientists"; September 2018

The 3rd young scientist congress "Challenging Researcher by Young Scientists" was held on 14 to 15 Sept. 2018 in National Museum of Science & Technology Bhaban, Dhaka, organized by Bangladesh Academy of Science (BAS). BAS is the highest professional organization of the country formed with the scientists having outstanding performance and achievement at home and abroad since 1973. On behalf of the Bangladesh Medical Physics Society (BMPS), Md.Mokhlesur Rahman, Md. Hafizur Rahman and Md. Mahbub Alam participated in the 3rd young scientist congress as oral speakers. The topics of them are on medical physics which are "A Hybrid IMRT Technique for Treatment of Breast Cancer-A Dosimetric Study" (Md. Mokhlesur Rahman); Comparison between hybrid IMRT and VMAT in Cancer of Lung- A Dosimetric Study (Md. Hafizur Rahman) and "Stereotactic body radiotherapy for localized peripheral lung tumor with DIBH" (Md. MahbubAlam). The session conducted by Chair Prof Dr. Mohammad Rezwan Khan (BAS) and Co-Chair Dr. Abdullah Shams Bin Tareq (BAS). Welcome address of the Inaugural Ceremony of the 3rd young scientist congress was delivered by Prof. Dr. M Shamsher Ali Chairperson, Organizing Committee. The Chief Guest was Mr. Mustafa Jabbar, Honorable Minister, Minister of Posts and TIT, Bangladesh and special Guest was Mr. Selim RF Hussian. The congress was concluded remarks by the Chairperson, Prof. Dr. Quazi Abdul Fattah.

participants of 3dr young congress

The 5th GI-CoRE Summer School for Medical Physics:- Hokkaido University, Sapporo, Japan

Mr. Md Akhtaruzzaman, the Vice-President of Bangladesh Medical Physics Society (BMPS) attended the 5th GI-CoRE (Global Institution for Collaborative Research and Education) Summer School for Medical Physics, which was jointly conducted with Medical Physics School offered by Hokkaido Summer Institute (HSI) between 6th-10th August 2018 at the Hokkaido University, Sapporo, Japan. This year, the Summer School and HSI welcomed 21 participants from 12 different countries: Bangladesh, China, Ghana, India, Italy, Japan, Malaysia, Pakistan, Philippines, Singapore, Turkey, and the USA. HIS -Medical physics school- was open for graduate students, whereas the GI-CoRE summer school was open for early career researchers such as assistant professors, lecturers, researchers, radiation physicists, and medical physicists.

Participants had the opportunity to learn from the world's leading researchers and enjoyed interactive sessions. In addition, they all presented their current scientific works

as an oral presentation. Moreover, they had the chance to visit the Proton Therapy Center and Real-time Tumor Tracking (RTTT) radiotherapy facilities available at the Hokkaido University Hospital.

All the participants successfully completed the course and were awarded a certificate of completion on the last day of the course.

GI-CoRE Summer in Hokkaido University, Sapporo, Japan

4th Varian Oncology Summit 2018, New Delhi, India; August 2018.

Mr. Md. Anwarul Islam, President of BMPS attended 4th Varian Oncology Summit in New Dellhi, India from 2-5 August 2018. The summit was organized by Varian Medical System International Pvt Ltd, India. Around 300 hundred participants from South East Asia were invited. Most of them are clinical Medical Physicist, some are Radiation Oncologist and a few Biomedical Engineer. Mr. Tim Clark, Head of marketing of Varian Medical System inaugurated the opening ceremony with a presentation of the recent advancement of Linear Accelerator. The four days summit was then conducted by different invited speakers by delivering their experiences, research, and new ideas.

Varian Summit 2018

Activities of Bangladesh Medical Physics Society for International Day of Medical Physics (IDMP) 2018; June 2018

Every year Bangladesh Medical Physics Society (BMPS) doing different activities to pursue the public awareness about medical physics in Bangladesh through arranging rally, seminar, conference etc. Keeping in mind the theme of IDMP this year BMPS performed several activities related to this for improving the medical physics, educational status in this country. This year BMPS arranged a public awareness program entitled 'Medical Physics Education for Better Cancer Care'.

On 5th June 2018, a seminar was held on behalf of Bangladesh Medical Physics Society (BMPS) and Department of Medical Physics and Biomedical Engineering (MPBME), Gono Bishwabidyalay at the BPATC School and College, Savar, Dhaka. The main aim was to disseminate the knowledge, necessity, importance and the present stand of medical Physics education for cancer treatment in our country.

A good number of participants from BPATC School and College have attended the seminar. The founder president of BMPS & Head, Department of MPBME Prof. Dr. Hasin Anupam Azhari and Mr. Rashed Al Amin were delivered their lectures on the role of medical physicist for cancer treatment, medical physics education, perspectives, and different challenges of this field.

Public Awareness seminar in BPATC School and College

World Congress 2018; June 2018

World Congress on Medical Physics & Biomedical Engineering was held on June 3–8, 2018, Prague, Czech Republic. The two advisory members, BMPS attended the congress. Prof. Dr. Hasin Anupama Azhari attended the AFOMP, IOMP HTTG, IUPESM meeting. Her speech was on the Role of Clinical Engineers in Radiological Equipment, Women in Medical Physics: Bangladesh and A rural mother and Child Health Center

in Northern of Bangladesh: Challenges and Perspectives as an invited speaker. Prof Zakaria had an invited speech also on Cooperative medical physics education between Heidelberg University in Germany and Gono University in Bangladesh and on Dosimetry protocols. A meeting was held with Dr. Siva Sarana IAEA regarding the development of South Asia Medical Physicist situation. In this world congress the new bodies of EC, IOMP had been formed.

World Congress 2018

BMPS advisory members with IOMP President **Prof Dr. Madan Rehani**
Meeting with IAEA Head…..
Gala dinner with IOMP secretary Ms. V. Tsapaki and Prof. Dr. Paulo Russo
Invited Lecture on Dosimetry protocol by **Prof. G A Zakaria**

Training on Nuclear Medical Physics; May 2018

The training program on "Nuclear Medical Physics" from 15th April to 15th May 2018 organized by Institute of Nuclear Medical Physics (INMP) in AERE, Ganakbari, Bangladesh Atomic Energy Commission (BAEC), Savar, Dhaka. The participants are technologists, doctors, Scientific Officers, Senior Scientific Officers, and Medical Physicists. On the behalf of BMPS, Md. Mokhlesur Rahman, Md. Hafizur Rahman and Mst. Zinat Rehana participated and successfully completed the training program. This program was inaugurated by Prof. Dr. Md. Sanower Hossain, Member, Bioscience, Bangladesh Atomic Energy Commission (BAEC).
The training program comprises of two parts; Theory & practical. Theories on Radiation Oncology, Nuclear Medicine and Radiation Oncology Physics were designed in course of the training program. The lecturers ware Radiation Oncologists from different hospitals, Scientific officers BAEC, Clinical Medical Physicist from different hospitals, Vendors, Engineer and Professors of different Universitys. The Advisor of BMPS Prof. Dr. Hasin Anupama Azhari delivered a lecture which was the well-explained lecture on brachytherapy to the participants. The participants visited the INMP to observe PET-CT machine, Hot Lab, LINAC and TPS room
In practical session, QC of PET-CT was done by the Scientific and Experimental officers. After Training program, an assignment has been provided to the trainees. At the end of the day, the Project Director, INMP delivered his valuable speech and conclude the program by distributing the certificates among the participants.

Nuclear Medical Physics training programs

Presentation on Safety and Bio-effects of Diagnostic Ultrasound; May 2018

Md. Mokhlesur Rahman, Executive Member, BMPS had attended as an invited speaker in the 5th Annual celebration organized by Pacemaker Royal Medical Academy affiliated with Daffodil University on 11 May 2018. He delivered his speech about the safety and bioeffect of diagnostic ultrasound and emphasize the importance of medical physicist in the imaging sector to ensure the quality service for patient care.

Seminars on Safety and Bio-effects of Diagnostic Ultrasound

BMPS Visit to Member of Biological Science, Bangladesh Atomic Energy Commission; April 2018

Prof. Dr. Md. Sanowar Hossain has been congratulated by the members of Bangladesh Medical Physics Society (BMPS) on becoming the honorable member of the division of Biological Science of Bangladesh Atomic Energy Commission, Agargaon, Dhaka, Bangladesh. The President, Vice President, Join Secretary and Advisory Member of BMPS have visited him and showed their gratitude for all the cooperation he has been providing to BMPS.

BMPS members Congratulate to Dr. Md. Sanowar Hossain , Member, BAEC

BMPS Members Visited Hon'ble President of Bangladesh; March 2018

One of the prestigious meetings of BMPS was held on 13th March 2018 at Bangabhaban with the Hon'ble president of Bangladesh Mr. Abdul Hamid one the occasion of 3rd International Conference on Medical Physics in Radiation Oncology and Imaging 2018. He was the chief guest of this conference. A group of BMPS members including president, secretary, and the founder president has attended the meeting. BMPS members discussed the importance of medical physicist in cancer treatment and president mention that he will cooperate to BMPS of any issues regarding cancer.

BMPS members Hon'ble President of Bangladesh

IMPCB Examination; March 2018

International Medical Physics Certification Board (IMPCB) examinations was held in Bangladesh on 13 - 14 March 2018 after the ICMPROI 2018 organized by Bangladesh Medical Physics Society (BMPS). The main aim of the IMPCB is to produce QMP in those countries where there is no procedure for the accreditation of Medical Physicist. The examiners ware Prof. Dr. Golam Abu Zakaria, Chair Subcommittee, Accreditation Committee, and Chairman & Chief Medical Physicist, the University of Cologne and Prof. Dr. Tomas Kron, Chief Examiner, Chair of Accreditation Committee, Director of Physical Sciences, Peter MacCallum Cancer Centre, Melbourne, Australia. The examinees are from Nepal, Malaysia, and Bangladesh. Total 13 medical physicists had appeared in Part I (Fig-1) exam and 5 medical physicists have given part-II (Fig-2) exam. The examiners are satisfied regarding the arrangement of the exam.

IMPCB Examiners, Examine and Organizer

Suresh Poudel (Nepal)

Suman Badal (Nepal)

Wei Loong Jong, Malaysia

Mr. Anwarul Islam (Bangladesh)

Prodip Baral (Nepal)

Rajan Projapoti (Nepal).

IMPCB Part 1 Passed Examine

Fig-3: IMPCB-part-II Passed examinee Mr. Anwarul Islam (Bangladesh)

Post Creation of Medical Physicists in Government Hospitals; March 2018

The Government posts for Medical Physicists in Bangladesh have been created and very recently the Government Order (GO) has been published. Bangladesh Medical Physics Society (BMPS) has been working from the very beginning for this post creation. The founder President of BMPS Prof. Dr. Hasin Anupama Azhari has taken the initiative and been consistently working hard for this outcome. At this time the posts have been created in the National Institute of Cancer Research & Hospital (NICRH), Dhaka, National Institute of Neurosciences & Hospital (NINH), Dhaka and Dhaka Medical College Hospital (DMCH), Dhaka. It is a great achievement for BMPS and it will only be fruitful once the Medical Physicists join in their posts and make the department of radiotherapy a complete team. Together we can provide quality treatments to the alarming number of poor cancer patients.

BMPS members visited to the Ambassador of Nepal to the People's Republic of Bangladesh

BMPS is the organization which not only working in Bangladesh but also working for south Asian country like Nepal. As Nepal is one of the developing countries and many Nepalese students are studying medical physics in Bangladesh, therefore, it was our goal to include Nepal embassy to our conference so that we can build a good relationship with them. As a result, we had invited to Nepal Ambassador to attend the 3rd international conference as a guest of honor. There was a fruitful discussion with the ambassador in aspects of our country, Nepalese students and obviously the medical physics situation of both countries. He expresses his positive and cooperative attitude in every aspect of our society.

BMPS members visited Nepal Ambassador

Conference Experience: AMPI-EC-CON; January 2018

In consequences of AMPI regional development, AMPI Eastern Chapter addressed to arrange a conference which is organized by the Department of Radiotherapy, Burdwan Medical College, Burdwan as 5th Eastern Chapter Conference "AMPI-EC-CON-2018" in association with AMPI Eastern Chapter (AMPI-EC) from January 20-21, 2018. Participants from neighboring countries attended this conference.

Executive member, MD. MOSTAFIZUR RAHMAN had attended as an invited speaker. His speech was on "Commissioning of a digital Linac-Elekta Synergy in Bangladesh". The conference had been designed by presenting various topics/papers by very eminent Medical Physicists' & Scientists' on IMRT, VMAT, SBRT, SRS, Radiation Protection & Pin-point accuracy of the high-end technique.

There was a presentation about "Proton Therapy" given by Dr, Dayananda Shamurailtpam sir, which attracted me more and influenced for taking further challenges

because of its precise technique which cures cancer immediately without damaging any healthy tissue surrounded by the infected cell. One of the speeches given by Dr. Rajesh A Kinhikar sir was about "Process Mapping to achieve a quality treatment plan managing the quantity - A roadway towards precision and safety" which was more informative.

The conference was a very good meeting place of Medical Physicists, Students, and experts who are taking the responsibilities of precisional radiotherapy using the latest state of art facilities of radiation therapy and updated knowledge sharing.

AMPI-EC-CON 2018

A network has been made with some expert professors. This was very interesting and even gratifying." Besides scientific lectures informal exchanges with inspiring experts during meals, breaks were considered a chance, even a unique opportunity. A historical tour around the Burdhwan arranged for foreign participants. For students, presentations were very useful in revisiting existing knowledge and putting it in a new light. Students also mentioned that "often, the usefulness of what is learned is not visible in the short term and it could take months and years for their pertinence to appear." Through the conference; students gained a better understanding of how philosophy provides an appropriate foundation for the discipline of nursing. Apart from setting & hearing the presentations, I discussed with some of expert Medical Physicists' by exchanging our views and strategy in case of applying the radiation to the human body. Now, I keep on account of my mind for every uncertainty of delivering the high-end radiotherapy and at the same time, I am excited to apply those weapons to beat this giant cancer. I felt very happy to give me the platform for sharing my knowledge in a formal presentation.

Bangladesh Breast Cancer Conferences ; December 2018

Bangladesh Breast cancer conference 2017 was held on 1st December in Pan Pacific Sonargaon, Dhaka. A good number of participants from BMPS have attended the conference. Many researchers, scientists, oncologists, medical physicists, and scholars have successfully completed the conference. The conference was divided the several scientific session of breast cancer including young scientists session. The conference scientific papers were very updated that demanding the current situation of Bangladesh. Local and foreign Participants from different countries were gathered knowledge from the conference.

Bangladesh Breast Cancer Conferences 2017

Physics Night Organized by Sunbeam Associates; November 2017

Sunbeam Associates is a service-oriented trading company in operation since 2004. They deal in electromedical equipment's like patient safety immobilization devices, patient marking - alignment laser system, whole radiotherapy dosimetry system, quality assurance, and plan verification tools as well as laboratory, diagnostic, scientific and hospital equipment in Bangladesh market. Each year they are celebrating Physics Night for the honor of Medical Physicist in Bangladesh. At 20 November 2017, they organized a Physics Night at hotel Eat Gallery, Gulshan, Dhaka. Most of the Medical Physicist from different hospital and university were attended in the program. Mr. Sam Chen, Sales Manager and Mr. Steven Hua Han Ko, Director of Asia Pacific of IBA Dosimetry GmbH promoted IBA Dosimetry System and showed recent development in their presentation.

Sunbeam Physicist Night 2017

Bangladesh Cancer Congress; November 2017

Oncology Club hosted the Bangladesh 'Cancer Congress 2017'' was held in Dhaka, Bangladesh on 10 and 11 November 2017. This two-day conference had been designed to make a gathering of physicians, Medical Physicists fighting against cancer. Many faculties from the different part of the world, BMPS membets attended in the conference. This Congress created a wonderful forum to update and explore the most recent information regarding the advances in the leading scientists and physicians involved in cancer management.

A special young investigator's session and interactive session on different common cancer of this region had been arranged in this congress covering an array of special specifically designed for those in the early stages of their career. Medical Physicists of BMPS has done excellent presentation in the medical physics session of the conference.

Cancer Congress 2017

A special the live streaming session on IDMP: AMPICON Jaipur; November 2017

The 17th Asia Oceania Congress of Medical Physics (AOCMP) and 38th Annual Conference of Association of Medical Physicists of India (AMPICON) 2017 was held on 4th -7th November, 2017 Jaipur, Rajasthan, India. The advisory members of BMPS, Prof. Dr Hasin Anupama Azhari, Bangladesh, Prof. Dr. G A Zakaria had attended the conference as an invited speakers and international advisory members. The speech was on Dosimetric Challenges of Photon Brachytherapy in Terms of Absorbed Dose to Water and New Developments in Image based Gynaecological Brachytherapy.

This year 150th birth anniversary of Madam Marie Curie celebrated at Jaipur, India along with the conference on 7th November. This year's celebration is dedicated to women with the theme "Medical Physics: Providing a Holistic Approach to Women Patients and Women Staff Safety in Radiation Medicine" and provided the opportunity to understand and tackle the concerns and hazards of the use of ionizing radiation in healthcare from women's perspective. This IDMP celebration was webcasted live of two hours session from Jaipur along with the live webcasts from the IAEA and the WHO. The whole program is conducted by Prof Dr. John Damilakis, IDMP coordinator IOMP and Prof Slavik Tabakov President IOMP. The speakers are Dr. H. Anupama Azhari Dr. Virginia Tsapaki, Dr. Shobha Jayaprakash, Dr. Eva Bezak. Her speech was on Medical Physics Contribution To Women's Health And Radiation Safety.

live streaming session on IDMP on 7th November

The congress was hosted and organized by the Department of Radiological Physics, SMS Medical College & Hospital, Jaipur, "Pink City". More than 850 delegates from 30 countries attended. The theme of the conference was "Advances in Medical Physics: Shaping the future of modern healthcare".

There was an IMPCB meeting with CEO of IMPCB with members within the period of the conference. The examination criteria, examination procedure for arranging IMPCB exam in different countries had been throughly discussed. This examination is applicable only for the countries where there no certification examination

BMPS Previous Newsletters

2013

2014

2015

2016

2017

AWARDS & HONORS

BMPS

IMPCB Accreditation Committee: Advisory Member, BMPS

Prof. Dr. Golam Abu Zakaria

International Medical Physics Certification Board (IMPCB) was formed in 2010. International Organization for Medical Physics (IOMP) is the designated principal supporting organization of IMPCB. It is working to establish the infrastructure, requirements and assessment procedures for the accreditation of medical physics certification programs in accordance with the requirements of IOMP guidelines. Every year the accreditation exams are held in different countries. This year the IMPCB Exam was held in Dhaka, Bangladesh in March 2018.

Prof. Dr. Golam Abu Zakaria, Chairman and Chief Medical Physicist of Department of Medical Radiation Physics at Gummersbach Hospital, University of Cologne, Germany and visiting Professor of Gono University, Dhaka Bangladeshhas become the member of the accreditation committee of the IMPCB. He is the Advisory Member of Bangladesh Medical Physics Society (BMPS). He has been working to establish the platform of Medical Physics in Bangladesh since 1998 by forming a group of medical physicists. He has been actively participating and guiding in different scientific workshops, seminars, conferencesand education of medical physics in Bangladesh that make him the Pioneer of Medical Physics in Bangladesh.

IOMP Accreditation Board Membership 2018-2021

The International Organization for Medical Physics (IOMP) is a professional organization for medical physics with nearly 22,000 members in 84 countries was founded in January 1963. IOMP is charged with a mission to advance medical physics practice worldwide by disseminating scientific and technical information, fostering the educational and professional development of medical physics and promoting the highest quality medical services for patients.

Prof. Dr. Golam Abu Zakaria, Chairman and Chief Medical Physicist of Department of Medical Radiation Physics at Gummersbach Hospital, University of Cologne, Germany and visiting Professor of Gono University, Dhaka Bangladesh has been honored as Vice Chair in IOMP accreditation board membership 2018-2021. He has more than 30 years of clinical and academic experiences in medical physics (both in Radiotherapy and Imaging) in Germany and also in the developing countries especially in Bangladesh and India. He is the Advisory Member of Bangladesh Medical Physics Society (BMPS). He has been working to establish the platform of Medical Physics in Bangladesh since 1998 by forming a group of medical physicists. He has been actively participating and guiding in different scientific workshops, seminars, conferences and education of medical physics in Bangladesh that make him the Pioneer of Medical Physics in Bangladesh. The BMPS is pleased to announce this honor.

Poster Presentation Award ICMPROI-2018

Bangladesh Medical Physics Society (BMPS) organized the "3rd International Conference on Medical Physics in Radiation Oncology and Imaging" in Krishibid Institution Bangladesh, Dhaka from 10-12 March 2018. More than 300 participants from home and abroad were attended at the conference. The three days conference comprises of the inaugural ceremony, scientific program, and cultural program. The scientific program included a plenary session, invited presentations, oral presentations, and poster presentations. In the poster session, three papers were selected out of 31 posters according to some well-defined criteria prepared by the poster award committee (Prof. Dr. Toma Kron, Mr. Jeyasingam Jeyasugiththan, Mr. Abu Kauser). The titles of the first, second and third papers were "Determination of effective dose of thyroid gland in nuclear diagnostic during thyroid scan", "A new approach of semi 3D computer treatment planning using plaster of Paris for breast carcinoma" and "Evaluation of image quality in CT chest by 50% mass reduction" respectively. In the closing ceremony awards were distributed to the following awardees.

First Award: Determination of effective dose of the Thyroid gland in Nuclear Diagnostic during Thyroid Scan; Maryam Mumu; Dept. of Medical Physics & Biomedical Engineering (MPBME), Gono University.

Second Award: A new approach of Semi 3D Computer Treatment Planning Using Plaster of Paris for Breast Carcinoma; Nazrul Islam; Medical Physicist, SZMCH.

Third Award: Evaluation of Image quality in CT Chest by 50% Mass Reduction; Niranjan Thapa; Nepal.

Figure: Poster Presentation (left) and First Poster Presentation Prize Winner (right)

Outstanding Research Publication Award: BPS

Bangladesh Physical Society (BPS) established in 1972 is a nonprofit organization for development and advancement the knowledge of Physics in Bangladesh.

Bangladesh journal of physics (BJP) is the official journal of Bangladesh physical society. This journal publishes their issue twice a year. Recently BJP has started to give the best scientific research award to encouraging the scientists in the named "Sultana N. Nahar Prize for Best Research Publication". In the year of 2107 (Vol No 22), a good number of papers were submitted out of which a paper titled "Ranking of 3D Radiation Treatment Plan Variants Considering Physical and Biological Parameters in External Beam Radiation Therapy" is awarded best research paper selected by editor panel. The award is given during the international conference on Physics 8-10 March 2018 organized by BPS.


Sultana N. Nahar Prize for Best Research Publication-2017

In

Bangladesh Journal of Physics

Published by Bangladesh Physical Society

In recognition of outstanding research publication in the division of Experimental Physics in Bangladesh Journal of Physics for the year 2017

RANKING OF 3D RADIATION TREATMENT PLAN VARIANTS CONSIDERING PHYSICAL AND BIOLOGICAL PARAMETERS IN EXTERNAL BEAM RADIOTHERAPY

A. KAUSAR, H. A. AZHARI, S. CHAUDHURY, M. A. BHUIYAN AND G. A. ZAKARIA

Prof. Jahangir M. Syed
General Secretary

Prof. Ajoy K. Ray
President

Achievement of Scholarship in Tokyo Metropolitan University, Japan.

Mr. Puspen Chakraborty member of Bangladesh Medical Physics Society has got full bright scholarship from Asian Human Resources Fund for the course of M. Sc in Radiological Science at the Tokyo Metropolitan University, Japan. Congratulations Mr. Puspen Chakraborty for your brilliant success.

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2017-2019

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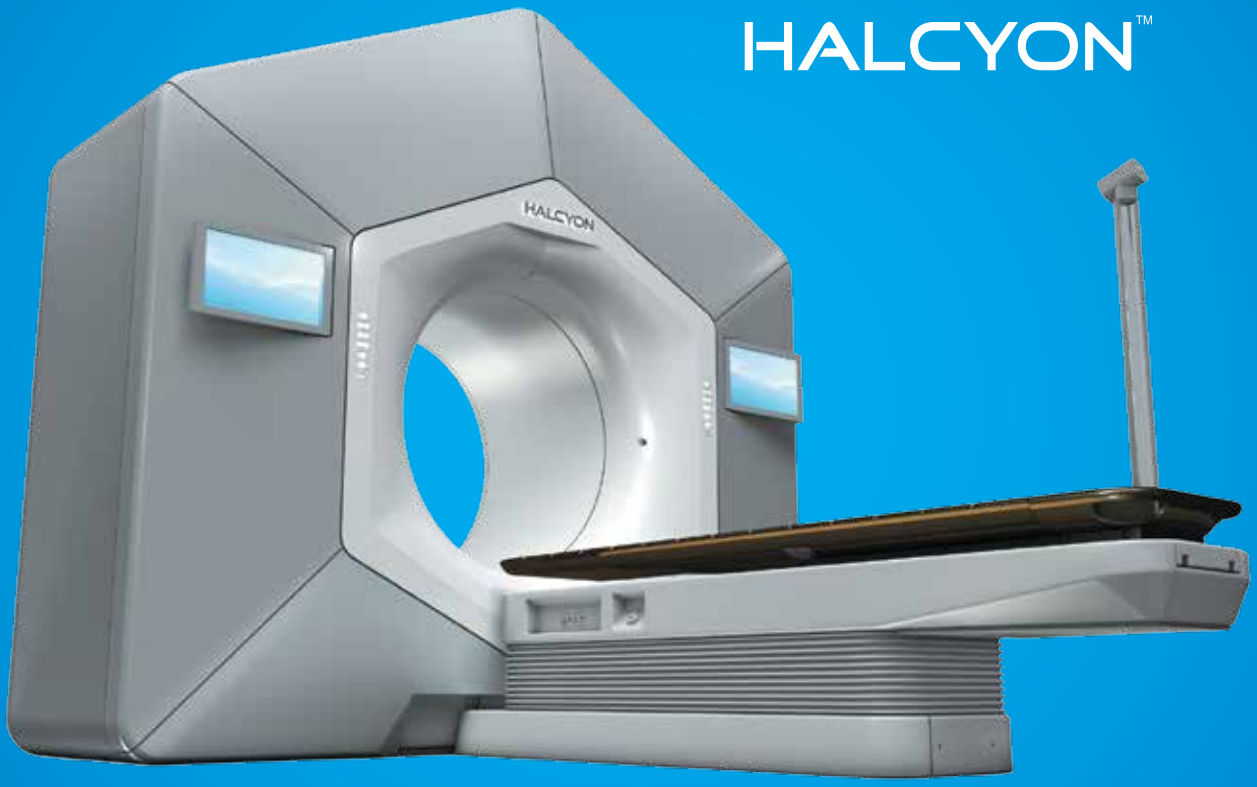

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