

MEDICAL PHYSICS GAZETTE

NEWSLETTER OF ASSOCIATION OF MEDICAL PHYSICISTS OF INDIA (AMPI)

An affiliate of Indian National Science Academy and
International Organisation for Medical Physics

Volume 2, No. 1

January 2018

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Editorial

Upcoming Modifications In Regulatory Frame-Work Related With Medical Physics

The Central Drugs Standard Control Organization (CDSCO) is a national regulator for Indian pharmaceuticals and medical devices. It is analogous to Food and Drug Administration, USA; European Medicines Agency, EU and Medicines and Healthcare Products Regulatory Agency, UK. The Drug Controller General of India (DCGI) within CDSCO is invested with the authority of the regulator. The DCGI is advised by the Drug Technical Advisory Board (DTAB). DTAB in its latest meeting in February 2018 has advised that ultrasound and similar medical imaging equipment be brought under purview of the Drugs and Cosmetics Act (DCA) 1940 as medical devices. Due to these changes x-ray imaging equipment like radiography, CT scanner, C-Arm, fluoroscopy, mammography, O-arm, angiography and MRI machines may need mandatory registration from DCGI for their manufacture, import, distribution and sale in the country. Though AERB regulates the x-ray equipment in the country its efforts will get a boost and additional regulatory helping hand especially in regulating the import of such equipment. AERB and CDSCO will have a better control on the import of pre-owned imaging equipment in order to ensure their quality and safety. In the same meeting DTAB didn't agree with a proposal to grant exemption for the import of radiopharmaceuticals from the Chapter III of the Drugs and Cosmetics Act 1940. It has opined that all indigenous manufacturers of radiopharmaceuticals shall be brought under DCA 1940. However, it has been made clear that radiopharmaceuticals will be under dual control of Deptt. of Atomic Energy and CDSCO. CDSCO will plan to create a full-fledged wing for the regulation of radiopharmaceuticals. In another important development the Union Cabinet approved some amendments to the National Medical Commission (NMC) bill 2017 which is likely to replace existing Medical Council Act 1956. According to the amendments approved the final MBBS examination will serve as common examination throughout the country and will serve as exit test or licentiate examination. It will also serve as screening test for foreign medical qualifications. Before this approval of amendments by the Union cabinet the Department Related Parliamentary Standing Committee on Health and Family Welfare observed that a number of streams of health care system has no standardization of curriculum or regulation of the quality of education and practice and hence recommended for the formulation of regulatory, licensing or accreditation norm for various allied health care professions. Though the impact of this recommendation is not clear at present AMPI may take note and formulate future course of action.

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Soft Copy of Medical Physics Gazette is available at AMPI Website : www.ampi.org.in

Message from the President, AMPI



Dear colleagues,

Season's greetings and the wishes for a fruitful, rewarding and exciting 2018. You might have heard in speeches of honourable Prime Minister of India from various platforms that twenty first century is the century of Asia and particularly of India.

As far as time is concerned, we are just two years away from the completion of second decade of twenty first century and hence there is urgent need of setting up time bound goals. As a professional society, we should specify commitment towards our own development as well as commitment of contributions towards the development of science and technology pertaining to medical physics. Undoubtedly, our services and contributions towards the wellbeing of patients are well known not only in radiotherapy but also in radiology, nuclear medicine and radiation protection. However, what we need now is the further improvement in the quality of services and research through improved professional qualities. This is a challenging task for the association and active contributions of all of us are highly required. In this context, the executive committee of the association has decided to conduct a few workshops, teaching programmes and organize AMPI School on thematic topics every year. Opinions of all the members are invited for selecting the workshop topics and themes of AMPI School on Medical Physics.

For the development of the discipline, we need to approach the concerned government authorities and get recognised radiological/medical physics as independent discipline of science. The recent technological developments have broadened the area of our discipline and professional activities which demands a meticulous approach not only in rendering clinical services but also in preparing the younger generation to meet the growing challenges of the future. We should accordingly modulate our education and training system periodically. Many of us are aware about the importance of quality audit. The quality audit programme commensurate with the technologies and capabilities of the equipment has been implemented in many countries. However, no effort has been made either by the association or by the governmental agencies to incorporate the provision in our practice. To start with, we can create a local network of quality audit (city wise or region wise) and conduct the quality audit on local/regional basis. This may be extended to the whole country in future depending on its success on local or regional basis. It is expected that the quality audit results will provide confidence in the services rendered, enhance the accuracy of our approaches and provide a proof of quality of our practices. In addition, we should also impress upon the governmental agencies to recognise this concept and incorporate into the regulatory framework.

A number of works need to be done on professional basis and we collectively need to chalk out the programmes and priorities. Moreover, we should be proactive in our approach rather than reactive and hence I invite proposals from you all about the plans and priorities of the association. Further, I am fully aware about the expectations of the members from the association and on behalf of executive committee I can assure you our prompt and active actions whenever and wherever the involvement of association is required.

Finally, I thank all the members on bestowing their faith on us.

S. D. Sharma
President, AMPI

Message from the Secretary, AMPI



A warm welcome to all AMPI members.

It's a great privilege and honor to communicate with you all through the newsletter, Medical Physics Gazette. This platform can be used to share ones experience, innovations and also gain knowledge from it. This is a great initiative taken by AMPI to bring together the entire Medical Physics community, researchers, etc. to share their thoughts & suggestions. I take this opportunity to congratulate the Editorial Board for this wonderful initiative.

The goal of this newsletter is to make sure that the readers can be assured that the time spent with Medical Physics Gazette will be filled with scientific articles produced by members of our community.

I call upon all esteemed members to participate through this newsletter by contributing news items, scientific innovations, articles and other relevant information.

With Best Regards
Dr Shobha Jayaprakash
Secretary, AMPI

MACHINE PERFORMANCE CHECK: AN AUTOMATED QA PROCEDURE

Priyanka Agarwal, Ritu Raj Upreti, Dr. D. D. Deshpande, Medical Physicist, Department of Medical Physics, Tata Memorial Hospital,

Daily QA is an essential requirement of modern radiotherapy [1]. In the last decade Linear accelerator technology and treatment techniques have become more complex and precise; therefore it is necessary to ensure that the accelerator is within specification. Morning checks may be time-consuming and requires machine time and resources. In addition, QA records have to be kept manually and are typically scattered across various databases. Varian has introduced Machine Performance Check (MPC), an integrated self-check tool which has advantage of the advanced automation and intelligence of True Beam system [2 – 4]. It uses a fully automated measurement sequence of kV and MV imaging. The application is designed for fast and reliable daily system testing, before the clinical treatments. The machine checks can be performed in less than 5 minutes by the operator without any additional measurements using dosimetric equipment and phantoms.

The IsoCal phantom (for MPC) is a hollow cylinder 23 cm in diameter and length with 16 tungsten-carbide bearing balls (each 4 mm in diameter). Phantom is placed isocentrically and aligned with cross wire and laser at 88 cm SSD. For imager system calibration, it uses a collimator plate (dedicated holder) attached to an accessory slot, having a steel pin in its center. Automated MPC procedure is initiated using MPC module in True Beam console. The predefined acquisitions consist of a set of 39 images (used in MPC evaluation) in which 12 acquired with kV imaging (XI system) using IsoCal phantom in the field, 27 with MV (acquired on the Portal Vision system), out of which 20 are with and 7 without IsoCal phantom. The results are immediately displayed for quick evaluation. Images and QA parameters can be available for viewing and evaluation offline. MPC Performs Geometric and Dosimetric Checks. For all the Geometric checks, 18x18 cm² field size is used. Following Geometric Checks are performed.

1. Treatment isocenter size/location - The size of the treatment isocenter is defined as the maximum distance of a beam's central axis from the idealized isocenter. The treatment isocenter is determined using acquisitions with the IsoCal phantom on eight gantry angles (0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°), representative for the full gantry rotation (Threshold ± 0.50 mm).
2. Imager projection offset (MV and KV Imager Projection Offset) is the maximum distance of the imager center from the projection of the treatment isocenter (Threshold ± 0.50 mm).
3. The MLC positioning accuracy of each leaf (MAX, Mean and individual offset bank A/B) is determined using a static comb pattern with alternating leaves

4. Jaw positioning accuracy is measured as the distance of the jaw edges from the center of rotation of the MLC (Threshold X1/X2 ± 1.00 mm and for Y1/Y2 ± 2.00 mm). The Rotation Offset for Jaw Positioning is measured by acquiring five images of an MLC comb pattern at collimator angles -90°, -55°, 0°, +45°, +90° and it is the maximum deviation of the nominal versus the actual collimator rotation angle observable through the edges of the MLC leaves.
5. Gantry Positioning Accuracy is evaluated in two characteristics, Absolute and Relative. The absolute positioning accuracy is defined as the coincidence of the couches vertical axis with the central beam axis at gantry 0°, evaluated with MV and kV images with the Iso Cal phantom and the couch at different heights and any lateral or longitudinal shift of the phantom with respect to the beam and the treatment iso center provides as the absolute gantry angle positioning error (Threshold ± 0.30°). The Relative Gantry Positioning Accuracy is defined as the maximum offset between the angle determined by the MV imaging system, and the nominal gantry angles (0, 45, 90, 135, 180, 225, 270, 315)° (Threshold ± 0.30°).
6. The Couch Positioning Accuracy of the different couch axes is measured with respect to a reference position. The rotational couch positioning accuracy is measured on a 10° travel range of couch (Threshold ± 0.40°). The other Couch direction positioning accuracy, example lateral couch and Longitudinal couch axis on a 5 cm travel range, and of vertical couch axis on a 15cm travel range is evaluated. The threshold has been given ±0.7 mm, ±0.70 mm and ± 1.20 mm respectively.
7. The Rotation induced couch shifts is the offset of the center of rotation from the treatment iso center (Threshold ± 0.75mm).

The dosimetric tests consist of Beam output constancy check, Beam profile constancy check (Uniformity) and Beam center shift. For dosimetric evaluation 13.3x13.3 cm² field size is used which reduces the impact of the jaw positioning. Following dosimetric Checks are performed

1. Beam Output Change: The average % of change in detector response in the central part of the detector (Threshold ± 2.00 %).
2. Beam Uniformity Checks, in the central area of the ratio image, it finds the smallest and the largest ratio values of pixel (Threshold ± 2.00 %).
3. Beam Centre Shifts is relative shift of the field center, defined by the jaw collimated field, with respect to the baseline (Threshold ± 0.50 mm).

Linearity test is not incorporated in MPC for any geometric or dosimetric check which is reported as the major limitation of this QA procedure [3, 4]. Also the accuracy of complete MPC evaluation depends on accuracy of image

processing algorithm. Although MPC is an efficient process to verify various machine parameters within a short time, however vendor advised to use MPC as an addition to the existing QA program of any hospital and must not replace any necessary QA checks.



Fig. (A) IsoCal Phantom mounted on True Beam Couch, (B) Tabulated result of Dosimetric Check, (C) MPC evaluation window, (D) Open field with comb-like MLC pattern for treatment isocenter definition.

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SCIENCE AND SPIRITUALITY

Dr. M. R. Raju, Fellow, Los Alamos National Laboratory, Mahatma Gandhi Memorial Medical Trust, Pedaamiram, Bhimavaram-534204, Andhra Pradesh, mgmtrust2@gamil.com

I am glad to learn that AMPI, with a broad vision to provide good quality service to application of radiation in medicine, has started publishing Medical Physics Gazette, that too especially in this historical year of the 150th Birth Anniversary of Marie Curie. I appreciate the invitation from the Editor, Dr. Pratik Kumar to write an article on Science and Spirituality. We are fortunate to have the great spiritual heritage and the equally great heritage in the science of professional field of radiation medicine. Time and gain there is a need to remind ourselves of this precious heritage to draw inspiration from it in order to deliver good quality service. I am thankful for this opportunity to share with you my thoughts about the Science and Spirituality.

Live your beliefs, and You can turn the world around.
--- Henry David Thoreau

There may be spirituality without science but there may not be good science without spirituality. I wish that the AMPI would be a role model for the developing countries in providing good service to mankind.

The potential as well as the danger to the human species arose with the evolution of consciousness and vocal cords. Consciousness is a 'faculty of knowing what passes in one's own mind'. But most of us are not aware of what goes on in our own minds except intermittently. The famous philosopher Jiddu Krishnamurti talks about watching what goes on in the mind as a "cat watches the mouse". In one of the famous museums in Amsterdam, there is a painting on display of Buddha watching a television connected to a video-camera looking into his mind. Buddha provided practical methods for moral, mental and intellectual taming. The essence of this guidance was depicted by Zen monks for children through two dolls of Buddha, one was loaded heavily in the head and the other was in the heart. The doll loaded in the head naturally falls down each time easily while the doll loaded in the heart always ends up in a stable sitting posture. I find that the intellectual development in our modern educational system tends to bypass the heart entirely. Spirituality can be considered as education of the heart freed from resentful selfishness and jealousy. This may require as Ramana Maharshi stated **some unlearning rather than learning.**

Children around the age of six months after they develop neck muscles to hold the head up seem to have the ability to maintain sustained awareness over a long period of time especially when they see strangers. Most of them seem to lose this ability somewhat after they develop memory. Some of the creative scientists and artists and poets seem to protect and retain this ability to maintain sustained vision for longer periods of time. Depending on the way the consciousness and vocal chords were used, the differences from a given man to given man are larger than from a given man and a given animal as pointed out by Montaigne, the famous French renaissance essayist around five hundred years ago. Perhaps the misuse of these gifts occurred early in our civilization. The period around 6th century B.C. was the age of intense social activity and religious unrest. The importance and guidance in using these gifts of evolution, consciousness and vocal cords properly was recognized by some of the wise people in different parts of the world independently as early as 2500 years ago. We may use the word spiritual guidance for this. However, unlike the fruits of science and technology that can be used by everybody, spiritual development has to be attained by each individual only through his own efforts and practice only.

To abandon scientific & technological help for human life would be to court disaster... Fail to modulate ... is equally disastrous. --- Jonas Salk, Nobel Laureate

It is interesting to note that in India as early as early 3rd millennium B.C. very advanced civilization was in existence both materially and spiritually. Archaeological discoveries at two major sites, Mohenjodaro and Harappa bear witness to this. Interestingly, the image of a human figure seated in a cross-legged posture, hands resting on the knees and eyes narrowed was also found there. Historically, the Bhabha Atomic Research Center had the vision of starting Medical Physics training very early in a big way and several people that received this training have been contributing positively to this field of medical physics globally. In this connection, we should express our appreciation to the vision of Dr. U. Madhvanath and his associates for starting AMPI and the Medical Physics Journal. It is also helpful for us to remember that several scientists in our field dedicated their lives to improve the human living condition with little concern for themselves. Roentgen and Mary Curie refused to patent their great discoveries and give away the fruits of their discovery to humanity. Marie Curie was even willing to give away her gold medals including two Noble Prize Medals when the French Government during the First World War requested people to loan their gold and foreign currency. The study of lives of great scientists reveals spiritual and human aspects of their work. One of the guiding principles for Roentgen was intellectual honesty and he had no patience with people who were selfish and were concerned with their own importance. Roentgen had always admired those that work with simple methods. Marie Curie had saintly characteristics. She rejected money, comfort and many advantages that famous people obtain from fame. Einstein's remark: "Marie Curie is, of all celebrated beings, the only one whom fame has not corrupted" says it all. The most commonly used "I" did not exist for Marie. She advocated to her daughters the importance of being useful. I have contributed to AMPI towards an award in the name of Marie Curie for a medical physicist who made exemplary contributions towards patient-centric approach. Dr. Viswanathan also contributed for this award. I would like to make a plea to AMPI also for additional funds to this award.

Generally there is tendency to separate science from spirituality. Science has been a spiritual path for several great scientists such as Kepler, Newton, and Faraday. Prof. A.P.J. Abdul Kalam had kindly presented to me a fascinating book "The Biology of Belief" by Prof. Bruce Lipton who is internationally recognized for his work. His research focused on membrane perception switches that controlled the shift from one behavior to the other. He wrote that his study of cells turned him into a spiritual person. And also, cellular insights serve to emphasize the wisdom of spiritual teachers throughout the ages.

Dr. Lipton also remarked that so many of us are leading limited lives not because we have to but because we think we have to.

Historically, the field of radiation medicine was developed by physicians and physicists who worked together and dedicated their lives to relieve suffering of cancer patients. Radiation medicine was perhaps the first successful good model of interdisciplinary medicine. The initial developments and needed techniques to treat cancer patients with radiation were made by the dedicated groups of physicians, physicists and engineers with support from their respective governments internationally. With the entry of commercial manufacturing of the accelerators along with associated developments and corporate culture, the field has flourished and expanded very rapidly, especially in India. The initial patient-centric approach and the need to provide appropriate treatment for all are being eroded by increasing commercial considerations. Dr. Pratik Kumar addressed this problem vehemently in his Editorial in the January, 2016 issue of Medical Physics Chronicle. A series of articles expressing concern in bringing cancer care to the underserved globally were published in the July 1, 2014 issue of the International Journal of Radiation Oncology, Biology, and Physics (popularly known as the Red Journal). Dr. Anthony Zietman, the editor's sentimental remark "I can now see how little I gave in comparison to how much I gained" should be a good soul-searcher for all of us in the field. And also, a special edition of the Red Journal on The Ethics of Radiation Oncology is published recently in the issue of October 1, 2017 regarding the need to provide the most appropriate treatment and foster a strong relationship with patients. In this respect, I find that the Cancer Institute in Adyar, Chennai is one of the good models to follow. Dr. S. Krishnamurthi and Dr. V.Shanta, the founders of this institute believed that no power on earth can destroy a self-less work.

Aim of science is to improve the human condition.
--- Ilya Prigogine, Nobel Laureate

Dr. Bruce Lipton's book reveals how beliefs control behavior and gene activity and consequently the unfolding of our lives and tells his audience that if they could change their beliefs, they could change their lives. Dr. Lipton truly believed "that only when spirit and science are reunited there will be the means to create better world. Realistically, most of us may not be able to do what Madam Curie and several others did for science and humanity but we can reduce our selfish interests somewhat, so that together we can have the critical mass needed for social reaction for improving the current human condition. The need for egoless and humane approach is particularly essential in our task to provide cancer care as it requires a multidisciplinary team highly talented and passionately motivated.

Acknowledgement

I wish to express my appreciation to Dr. A. R. Sundararajan and Dr. Vegesna Vijaykumar Raju for their suggestions to improve this draft.

WORKSHOP ON RADIOLOGICAL SAFETY AND IMAGING TECHNIQUES

Dr. A. Saravana Kumar, Department of Medical Physics, PSG Hospitals, Coimbatore

PSG Institute of Medical Sciences and Research & PSG Hospitals, Coimbatore organized a two day workshop on "Radiological Safety and Imaging Techniques", on Nov. 25-26, 2017. The honorable Vice Chancellor of Bharathiar University, Prof. Dr. A. Ganapathi was the chief guest at the workshop inauguration function. The workshop was presided over by the Dean Prof. Dr. S. Ramalingam, PSG Institute of Medical Sciences and Research & PSG Hospital. The workshop was organized by Dr. A. Saravana Kumar, Dr. K. N. Govindarajan & Dr. B. Devanand, PSG Centre of Medical Physics & Department of Radiology, PSG Hospitals. The Tamil Nadu Dr. M.G.R Medical University, on reviewing the workshop contents, designated this education activity for a maximum of 10 credit points. The aim of the workshop was to offer training in radiation safety and Quality Assurance Testing and Installation survey, essential for ensuring the radiation safety of the patients, the staff and the public, in the imaging departments, without compromising on the diagnostic outcome. The faculty conducting the workshop has long teaching experience in this field and comprise scientist from the Atomic energy Regulatory Board, Chennai, practicing medical physicists from reputed cancer centres and teaching staff from Anna University and PSG Hospitals. Totally 300 delegates were attended the workshop from all over India. So far, PSG Hospitals have conducted 4 workshops for training the practicing staff (physicians, medical physicists and X-ray technologists) and the students of medical physics & X-ray technology.

This is a continuing education series for training physicians working in imaging departments and for manpower development to test X-ray units in imaging departments for regulatory compliance. We have received partial financial support for this workshop from govt funding agencies namely ICMR, AERB, and CSIR.

THREE CHEERS !!!

Prof. Arun Chougule, Head, Deptt. of Radiological Physics, SMS Medical College, Jaipur has been appointed Dean, Student Welfare, Rajasthan University of Health Sciences, Jaipur in Nov. 2017. Prior to this in Oct. 2017 he received Emerging Medical Scientist Award by National Academy of Medical Sciences (India) at Jaipur.

THREE CHEERS !!!

Dr Kamlesh Passi, Chief Medical Physicist, MOH Ludhiana was honoured with World Healthcare Excellence Award 2017 by World Achievers Foundation.

Dr. Biplab Sarkar, Senior Medical Physicist, Fortis Memorial Research Institute, Gurgaon, Haryana was awarded Ph.D. in Nov. 2017 by GLA University, Mathura on the topic "A study on implementation of new improved methodologies in modern radiotherapy for better clinical practice." He was also nominated as Expert Faculty in IAEA Medical Physics teaching course at Dhaka Medical College, Bangladesh, 17-21 December 2017. Congrats !!!



Dr Raghukumar P, Addl. Professor and **Prof. Raghu Ram K Nair**, Head, Division of Radiation Physics, Regional Cancer Centre, Trivandrum were awarded 7th National Award for Technology Innovation by Sri Ananth Kumar, Hon'ble Minister for Chemical and Fertilizers, Govt. of India at Vigyan Bhawan, New Delhi on 1st march 2017 for developing latex based Bladder-Rectal Spacer (BR-Spacer) for use in the treatment of cancer of uterine cervix by HDR brachytherapy. Congrats !!!

OBITUARY

IN MEMORY OF DR CYRIL ALBERT JAYACHANDRAN: A TRIBUTE

Dr. Paul Ravindran, Professor of Radiation Physics, Department of Radiation Oncology, Christian Medical College, Vellore, India

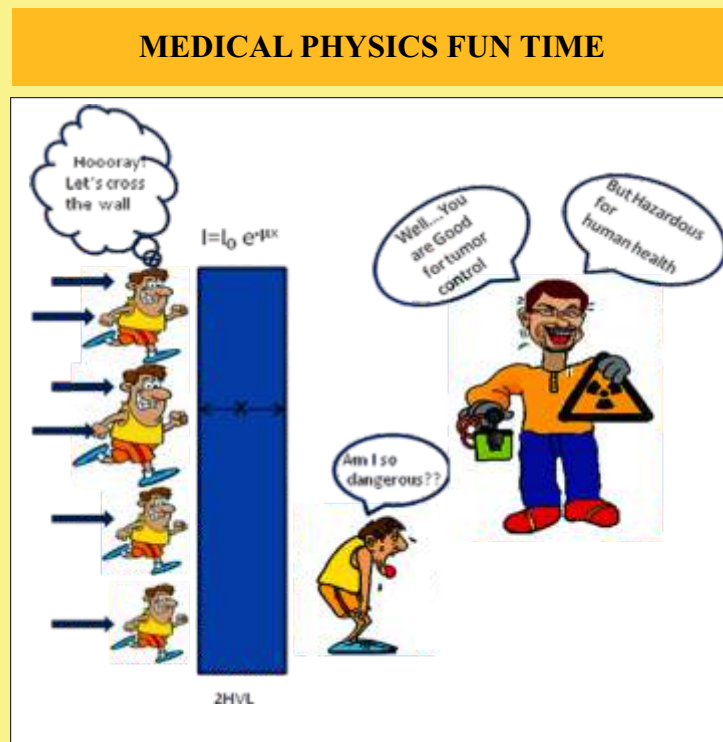


It was at 11 pm on 10th June 2017, Dr Cyril Albert Jayachandran, former professor of Radiation Physics, received the home call to be with THE LORD JESUS forever. Born on 5th July 1929, he had his schooling at Trichy, and completed his B.Sc. in Physics at the American College, Madurai. He then joined Christian Medical College Hospital, Vellore in 1953 in the department of Radio-diagnosis. In 1955, he started to assist in the Radiotherapy section in planning radiation treatment and also in calibrating the Superficial and Deep x-ray therapy machines. Dr. Jayachandran was deputed to do his M.Sc. in Physics at the Madras Christian College, Chennai in 1958 and after completing his post-graduation, he joined back as Hospital Physicist in 1960. Dr. Jayachandran took charge as the Head of the Physics department of the Christian Medical College in January 1962, which catered to teaching Basic Physics to the MBBS students undergoing the one year Pre-Professional course. In the year 1966, by the efforts of Dr. Morrison, Director of the Radiotherapy

Department of the Hammersmith Hospital, London, Dr. Cyril Jayachandran was deputed to the Hammersmith Hospital for 6 months training in the use of isotopes and radiation physics of Radiotherapy with high energy machines on a British Council Scholarship. Professor Fowler, the then head of the Medical Physics department at Hammersmith found that he could be of help in the radiotherapy section of the Hammersmith Hospital and hence arranged for a doctoral grant for a period of two years to carry out research in the Royal Postgraduate Medical School, London which enabled him to acquire the Doctorate (Ph.D) degree from the London University in August 1968. On his return after completing his Ph.D. Dr C A Jayachandran significantly contributed to the development of Radiation Oncology in CMC. He worked with Dr. Carl F Von Essen, a visiting Radiation Oncologist from USA in establishing seed-implant. In 1978 he commissioned the Betatron with high energy electrons and 42 MeV x-rays, first of its kind in India. In 1976, Dr. C.A. Jayachandran was made in-charge of the Dr Ida B. Scudder Isotope laboratory, which is presently the Nuclear Medicine Department. A Radio-pharmacy section was developed by Dr Jayachandran in the isotope laboratory. This enabled to have cold kits for imaging by tagging with the eluted Technetium 99m isotope from the Molybdenum Column bought from BARC. He was the Registrar of the Christian Medical College for a four year term from 1981.

Dr Jayachandran was a recognized Ph.D guide of the Madras University and had been examiner for Ph.D exams of Madras and Kerala universities. Dr. Jayachandran has contributed significantly to the academic programme of the Christian Medical Association of India.

He was convener – secretary for the CMAI teaching programme for more than 20 years and was responsible in starting the Nuclear Medicine technology programme at CMC under Christian Medical Association of India. He was awarded with the Dr. D. W. Mategoanker National award by the Christian Medical Association of India. He was an excellent teacher and was admired by all his students and a role model to emulate. Above all, Dr Jayachandran was a great human being, with concern for others. This is evident from the number of people he has uplifted and supported for betterment of their career. He is survived by his wife Mrs Violet Jayachandan, daughter Dr Sujatha Thomas and son Dr Vijay Jayachandran.



*Ms. Ranjna Agarwal & Mr. Sushovan Das Bairagya,
Lions Cancer Detection Centre Trust, Surat*

Debating Contest

Medical Physics Gazette, newsletter of Association of Medical Physicists of India (AMPI) invites entries from ALL in maximum 1000 words FOR or AGAINST the following proposal: **“The Cobalt-60 based modern radiotherapy is relevant to the Indian scenario”**.

The entry may include picture, graph, table, references etc. and must be sent by email to the editor at drpratikkumar@gmail.com by **15th July 2018**. Kindly write your Name, Designation, Affiliation and Phone number in email. One contestant may send just one entry either FOR or AGAINST the proposal.

The decision of the editor for all things regarding the contest including its conduct, publication, announcement and prizes will be final and binding. **Each winner in FOR and AGAINST side of the proposal shall be given prize of Rs. 5,000/-** sponsored by **M/S TeamBest Theratronics Asia Pvt Ltd.**

Right Dose

Innovation Leadership in Dose Management



The general discourse on radiation, absorbed radiation dose and what implications there are for humans is highly controversial. In the field of medicine, radiation has unquestioned advantages: it can reveal hidden indications of disease, from broken bones and lung lesions to heart defects and tumors. And it can be used to treat certain cancers. However, sensible usage and application is mandatory. As an innovation leader in medical imaging

Siemens Healthineers has claimed an opinion on this matter, it is called: Right Dose. It is our top priority to protect patients and staff from unnecessary radiation – while always pursuing premium image quality in diagnostics and thus optimal patient outcomes.

For business queries,
please email us at: hc_contact.india@siemens.com
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