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Editorial

The system of radiological protection: ICRP reviewing it and calls for its strengthening

The system of radiological protection during the use of ionizing radiation in various facets of life has been in place for more than a century and the same has been reviewed and revised several times by the stakeholders, among which, the International Commission on Radiological Protection (ICRP), a charity registered at England, is a front-runner to ensure the safe and peaceful use of radiation in industry, science, agriculture, research and medicine. ICRP is an independent, not-for-profit and non-governmental international organization which works in collaboration with professionals' associations, IAEA, national regulators, WHO and individuals to ensure the inclusiveness as well as to get benefited with the expertise and experiences with the diverse situations. ICRP published its last recommendations in 2007 and now it has embarked upon its review and revision and is paving the way to come-up with new updated recommendations for the standards for the next generation. ICRP has already made task-groups (TG) in 30 identified areas where generational changes are happening. Some of them are; Radiopharmaceutical doses (TG 36), Radiation risk inference at low dose and dose rate (TG 91), Internal dose coefficient (TG 95), Computational Phantom (TG 96), Mesh type reference computational phantoms (TG 103), Individual response to radiation (TG 111), Emergency dosimetry (TG 112), Risk and dose to astronauts (TG 115), RBE, Q and W_R (TG 118), Effects of radiation on diseases of circulatory system (TG 119), Effects of radiation in next generation (TG 121), Detriment calculation on cancer (TG 122), and Principle of justification (TG 124). In addition to above-mentioned TGs, about 19 other topics are under consideration. These subjects include the individualisation of dose and risk, non-cancer effects beyond cardiovascular, sources and impacts of uncertainties, protection of environment and non-human biota, molecular radiotherapy etc. Very soon ICRP may publish reports on Radiation protection in digital radiology (Publication 154), Specific absorbed fractions in pediatrics (Publication 155), Ethics in radiological protection for patients, Protection in surface and near surface disposal of solid radioactive waste, Dose coefficients intake of radionuclide by public, etc. ICRP routinely holds webinars and workshops to involve all the interested parties for such review of the system and to identify the gaps. It conducts mentorship-mentee programmes to reach the young minds all over the world.

In last two symposiums, one in 2022 at Vancouver and another at Tokyo in 2023, ICRP discussed the shortage of investment in training, education, research and infrastructure in many sectors and countries which may compromise the expertise in radiological safety, new innovation in diagnostic and therapeutic modalities, innovation in new detectors and materials, space travel (which is becoming reality fast), long term waste disposals and many futuristic applications which are still not visible. Some of the existing situations, like risk of low dose, risk of radon in dwelling in many countries etc. need appropriate competencies and capabilities to solve the uncertainties but may face inadequacy due to resource-crunch. The shortage of resources was noticed in a number of meetings. As early as in 2012 the IAEA and WHO called for action at Bonn to strengthen the radiological system by governments, civil societies, international agencies, and professional associations. NCRP, US underlined the shortage of radiation professionals in 2015 which was followed by the observations by the experts from European Union in 2019, German Radiation Protection Commission in 2021 and US National Academy of Sciences in 2022. In Vancouver call of action, ICRP has called upon governments, funding agencies and national laboratories to leverage the resources for research in radiological protection. It calls upon universities to make students aware about the job opportunities in radiological sciences and emphasizes to make public aware about the radiological protection in simple language.

We may plan accordingly as well since the situation may be similar in India and our futuristic work-load is manifold and goals lofty as we poise to take a quantum jump on the indices of development.

Pratik Kumar

AI IN RADIOTHERAPY: POTENTIAL TO REVOLUTIONIZE CANCER TREATMENT

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The recent development in Artificial Intelligence (AI) in terms of hardware availability with richer GPUs and tremendous developments in the software side, such as deep learning, open AI, Transformers, hugging face, and many more, indicates AI's promising role in future radiotherapy. The future of cancer treatment is here, driven by AI. In radiotherapy, AI will not just enhance how we treat cancer but also transform the entire process. With its ability to improve precision, minimize side effects, and create tailored treatments, AI is becoming a critical ally in the fight against cancer. As the demand for advanced and adaptive therapies grows, the integration of AI is reshaping the landscape, making cancer care more innovative, safer, and more effective.

Why AI is a Game-Changer for Radiotherapy

AI willbring a fresh wave of innovation into radiotherapy by tackling some of the most significant challenges in cancer treatment, such as image segmentation, tumor classification, organ contouring, image enhancement, and more. It can process massive amounts of data at incredible speeds, recognize patterns humans might miss, and optimize treatment plans with pinpoint accuracy. With AI, medical practitioners can offer personalized treatments that target tumors more precisely, sparing healthy tissue and improving treatment outcomes.

AI in Action: Transformative Applications in Radiotherapy

1. Predicting Treatment Outcomes: AI with a Vision

AI's ability to analyze complex medical imaging data can predict patient responses to treatment before therapy even begins. AI can provide valuable insights into tumorbehavior by analyzing radiomic features derived from CT, MRI, and PET scans, guiding oncologists in developing highly individualized treatment strategies. Such personalized approaches increase the likelihood of successful treatment while minimizing damage to surrounding healthy tissues

2. Patient-Specific Quality Assurance: Safeguarding Precision

The precision required in radiotherapy cannot be overstated. AI can enhance the accuracy of radiation delivery by providing real-time adjustments and monitoring of radiation doses, ensuring that treatments remain precisely targeted. Automated quality assurance systems powered by AI will offer the ability to fine-tune each session, adapting as the patient's response evolves over time.

3. AI-Powered Radiotherapy Planning: Speed Meets Accuracy

AI will significantly reduce the time required to develop radiotherapy treatment plans. Complex planning processes that traditionally took hours can be completed within a fraction of the time by employing advanced algorithms capable of rapidly analyzing clinical, imaging, and genetic data. This optimization will accelerate the planning process and ensure a more accurate radiation distribution, thus improving treatment efficacy while protecting healthy tissues.

4. Reinforcement Learning: Smarter Every Time

AI is constantly learning; with reinforcement learning, itwill get even better at planning and image processing. AI refines its strategies with each iteration by constantly adapting based on new data and feedback. With every new case, AI's understanding of cancer treatment will become sharper, allowing for more dynamic, personalized therapies that evolve alongside the patient.

5. Motion Management: Eye on the Target

Patient movement, such as breathing, poses a challenge in maintaining precise targeting during radiotherapy. AI-based systems can predict and compensate for these movements in real-time, ensuring that the radiation beam remains focused on the tumor. This capability is crucial for maintaining image alignment and tumor segmentation accuracy, thereby improving treatment outcomes.

In addition to these groundbreaking applications, AI's potential in radiotherapy extends far beyond, with emerging uses in adaptive treatment strategies, automated contouring, and even integrating genomic data to personalize cancer care further.

Navigating Challenges: A Path Forward for AI in India

Several challenges must be addressed to integrate AI fully into radiotherapy in India. These include:

1. Data Standardization: Inconsistent formats and incomplete medical records can limit AI's effectiveness. Ensuring standardized, high-quality data across healthcare facilities is essential.

2. Cost and Infrastructure: The high cost of AI technologies and the need for robust computational infrastructure can hinder widespread adoption, particularly in resource-limited settings.

3. Training: AI tools require skilled professionals to understand the technology and its clinical implications. Ongoing education and training programs for medical physicists and oncologists are vital.

A collaborative approach is needed between government agencies, academic institutions, and industry stakeholders to overcome these challenges. By investing in infrastructure, digitizing medical records, and creating affordable AI solutions tailored to India's healthcare system, AI can be effectively integrated into radiotherapy. Furthermore, professional societies should offer continuing education to ensure that medical physicists stay at the forefront of AI innovations.

Medical Physicists: Guardians of AI in Radiotherapy

Medical physicists will be crucial in integrating AI into radiotherapy. Their deep knowledge of radiotherapy and AI technology will make them essential in ensuring that AI is used safely and effectively. They shall validate AI algorithms, verify that AI-generated treatment plans meet clinical standards, and refine protocols to ensure patient safety. For instance, they will review the accuracy of AI recommendations in treatment planning systems (TPS) and adjust plans as needed to align with best clinical practices. As AI systems increasingly rely on real-time data and adaptive responses, medical physicists will oversee these dynamic changes to ensure they comply with patient-specific safety standards. Keeping pace with technological advancements and ongoing education will be essential for medical physicists to manage AI's role in radiotherapy effectively.

Ethical and Safety Considerations

Integrating AI into radiotherapy presents ethical and safety concerns that must be addressed. Ensuring AI algorithms are validated according to clinical standards and operate transparently is crucial for maintaining patient safety. International regulatory bodies are working to ensure that AI-driven treatments meet the same rigorous standards as traditional methods. In India, regulatory standards are expected to evolve to keep pace with these advancements. Upholding these standards will be essential for protecting patients while effectively leveraging AI's potential.

Overcoming the Trust Gap: AI as a Partner, Not a Replacement

Despite the promising capabilities of AI, there is reasonable skepticism regarding its role in healthcare. Concerns about AI potentially displacing the human element in medical care, making errors, or being untested for critical applications such as cancer treatment are valid and must be addressed.

It is essential to understand that AI is not designed to replace medical professionals but to complement and enhance their work. Rather than substituting human judgment, AI aids in analyzing data more thoroughly and assists in making more informed clinical decisions. While AI excels at processing large volumes of information quickly, it still relies on human oversight. Medical professionals remain responsible for validating AI-generated insights and making final decisions about patient care. By taking over repetitive and data-intensive tasks, AI allows doctors to concentrate on what truly matters: interacting with patients, customizing treatments, and ensuring the highest standard of care.

Looking Ahead: The Next Frontier of AI in Radiotherapy

As radiotherapy continues to evolve, artificial intelligence (AI) is set to play an increasingly pivotal role. Future innovations may include AI systems capable of predicting treatment outcomes with high precision and identifying novel cancer biomarkers. The development of hybrid treatment modalities, integrating AI with traditional techniques, promises to enhance personalization and adaptability in cancer care.

To ensure that India remains at the cutting edge of AI-driven radiotherapy, fostering international collaborations and investing in critical areas such as infrastructure, talent development, and advanced research will be crucial. By creating a robust ecosystem that supports these efforts, India will be well-positioned to leverage AI's transformative potential fully, advancing the field of radiotherapy and improving patient outcomes.

Conclusion: Embracing the Future of Cancer Treatment

AI will not simply enhance radiotherapy; it will reshape the entire field. By optimizing treatment plans, improving precision, and personalizing care, AI will lead to more accurate and efficient cancer therapies. However, challenges such as data standardization, infrastructure, cost, and education must be addressed to realize this potential fully. Medical physicists will be crucial in this transformation, ensuring AI technologies' safe and effective integration into clinical practice. Their expertise will be essential in validating AI algorithms, overseeing dynamic treatment adjustments, and maintaining rigorous safety standards. Collaboration across disciplines, alongside ongoing education and training, will be vital in advancing AI-driven radiotherapy in India. With these efforts, AI will revolutionize cancer care and offer better outcomes and renewed hope for patients and their families.

CUSTOMIZED SURFACE MOULD SUPERFICIAL TREATMENTS WITH IR-192 HIGH DOSE RATE BRACHYTHERAPY FOR SKIN CANCER

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Superficial skin lesions with histology basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) occur in face or dorsum of the hand. Radiation therapy is practised as a pattern of care even from Radium era. Superficial irradiation offers good results maintaining good cosmesis and no after effects, also preserving functions of the skin around. The selected radiotherapy plan is determined by the size, depth, anatomic location of the lesion. Most of the skin contours are curved and irregular. Quality of the radiation is mostly superficial XRays, 75 KV to 125 KV with less filtration offers beam of less penetration, to treat lesions 5mm thick and deep X Rays above 180 KV for thicker lesions. Quality of X-rays varies based on optimal ratio of surface dose to ideal depth dose at the base level. Use of orthovoltage is no more in practice as they became obsolete and also sometimes affects the adjacent bone or cartilage due to excess relative absorbed dose. High energy electrons are preferred because appropriate energy could be selected and lead cut outs or low melting point alloy moulds could be prepared for irregular fields. Rapid fall of dose helps underlying structures getting fewer doses and 90% of the incident dose is prescribed by selecting suitable electron energy. Radium brachytherapy using surface moulds, are totally replaced by High Dose Rate (HDR) Iridium-192/Co-60 after loading machines by preparing special moulds with impressions taken by dental moulds, or mounting on elesto plastic belts or with thermoplastic positives. Immobilization of mounting applicator relative to treating distance becomes important criterion during dose delivery with dwelling high intensity point sources. 40 to 50 Gy total dose is delivered at 4-5Gy per fraction, 10 fractions, at 2 fractions/day in >6 hourly intervals. If area is very small a single dose of 18 to 22 Gy could be tolerated. Outcomes are excellent with least morbidity. 2 case reports are highlighted as our experience in the north eastern part of India.

A microSelectron HDR high intensity Ir-192 machine (M/s Nucletron, Netherlands) is used for brachytherapy. 2 patients received surface mold brachytherapy. Special catheters (Flexicath Single Leader, Trichy, India) used for interstitial implnant suitable for connecting to machine are used, by mounting on Orfit Thermoplastic casts, which are made for fitting to entire head including treatment area. Dental wax is used for immobilizing multiple catheters with inter-tube separation 1 cm. Fig.1, and Fig 2 shows the surface mould prepared for one of the patients. Geographical optimization was applied for satisfactory dose distribution, with variable dwell times. The clinical diagnosis, location of the lesions of the patients and their treatment details are highlighted in Table-1. Fig.3, shows the skin condition of patient Sl.No.1 at the time of reporting to the cancer clinic. Fig.4 shows the CT scan of the patient, with the orfit applicator showing one of the six catheters in the sagittal plane, along with the pellet dwell positions and resultant dose distribution.

Fig.1: Orfit Surface mold (View from Top)

Fig.2: Surface mold (View left-lateral side)

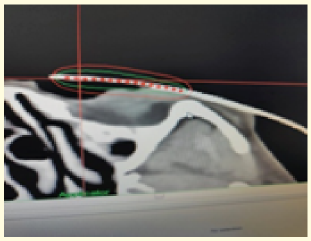


Fig.3: Peri-orbit (L) lesion before RT

Fig. 4: CT Scan with surface mold

Table-1 Details of Patients and their treatments

SNo	Details of Skin Lesions	Histopathology	Treatment Plan	Dose Delivered	Eye lens dose
1	Eye and Adnexa. Ulcerated growth in Left Peri Orbit area	Adeno Cystic Ca. Low Grade	6 catheters, 1cm apart, 6 Dwell positions in each catheter, 0.25 cm interval between dwell positions	40 Gy/ 10 # 2 Fr/Day >6h inter fraction interval	Maxm.67% Minm.40% of tumor dose
2	3cm x 3cm Inner Canthus Right Infra Orbital	Basal Cell Ca.	2 Catheters, 1 cm apart, 7 Dwell positions in both, 1 cm apart, 0.25cm interval between dwell positions	50 Gy/10 # 2 Fr/Day >6h inter fraction interval	Maxm.23% Minm.11% Of tumor dose

Two year follow up of both the patients confirmed satisfactory outcome of treatment with good local control. In the first patient till now the left eye has good vision (Fig.5). We have to wait and see any radiation effects on the eye lens during further follow up.

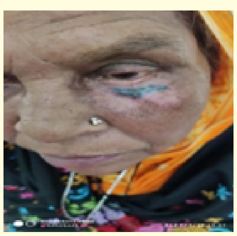


Fig. 5: Skin condition after 2 Yrs

Execution of fractionated mold therapy has the following precautions to be confirmed. Reproducibility and contact with the treated area should be good. Also the treatment distance should be uniform, with perfect conformity with the irregular up and down skin contour. Throughout treatment time, immobilization should be maintained. With brachytherapy, inverse square law is dominant, there will be under dosing in some areas, leading to failures. Electron beams need irregular customized shield cut outs for treatment, and may give rise to lateral scatter electrons with high atomic number shielding material. HDR machines are available in almost all radiation therapy departments, and these surface moulds could be made tailored to the requirements and for variable sites.

WHO'S WHERE

Ms. Mohini Manav has joined Andromeda Cancer Hospital, Kundli, Sonipat, Haryana, as RSO in April 2024. Previously, she was at S N Medical College, Agra, Uttar Pradesh.

Ms. Sunetra J S has joined Mahavir Cancer Sansthan, Patna, Bihar as Medical Physicist in June 2024. Earlier she graduated from Mangalore University, Mangalore, Karnataka.

THE NEED FOR HARMONIZATION, STANDARDIZATION, AND ACCREDITATION OF MEDICAL PHYSICS EDUCATION

Prof Arun Chougule
Chair ETC IOMP and Chairman IOMP accreditation Board

Introduction

Medical physics is a dynamic field that bridges the gap between physics and medicine, playing a critical role in the diagnosis and treatment of diseases through advanced imaging and radiation therapy. The continuous advancement in medical technologies and practices necessitates that medical physics education remains current and of high quality. As the field evolves, the need for harmonization, standardization, and accreditation of medical physics education becomes increasingly vital. These processes ensure that medical physics programs provide consistent, high-quality education that meets global standards and prepares graduates to meet the demands of the profession. This article explores the importance of harmonization, standardization, and accreditation in medical physics education, detailing their benefits, challenges, and implementation strategies.

The importance of harmonization in Medical Physics Education

Harmonization refers to the process of aligning educational standards and practices across different institutions, regions and globally. In the context of medical physics education, harmonization is essential for ensuring that all students receive a comparable level of education, regardless of where they study.

1. **Global Mobility and Recognition**

   Harmonized educational standards enable medical physics professionals to work and be recognized internationally. This global mobility is crucial in a world where healthcare professionals often cross borders to provide expertise and services.

2. **Quality Assurance**

   Harmonization ensures that all educational programs meet a minimum standard of quality. This consistency is critical for maintaining the integrity and reputation of the medical physics profession.

3. **Facilitating Collaboration**

   When educational standards are harmonized, it is easier for institutions, professional organisations and regulatory authorities to collaborate on research, training programs, and professional development initiatives. This collaboration can lead to significant advancements in the field and the sharing of best practices for benefit of society.

The importance of standardization in Medical Physics education

Standardization involves establishing and enforcing consistent educational criteria and practices across medical physics programs. This process is fundamental to ensuring that all students receive the same foundational knowledge and skills irrespective of the nation, state or region.

1. **Curriculum Development**

   Standardization helps in developing a core curriculum that all medical physics programs must follow. This ensures that essential topics and competencies are covered uniformly across programs.

2. **Benchmarking and Assessment**

   Standardized criteria allow for the benchmarking of educational programs and the assessment of their effectiveness. This process helps in identifying areas for improvement and ensuring that programs continuously meet high standards.

3. **Certainty for Employers**

   Employers can be confident that graduates from standardized programs possess the necessary skills and knowledge to perform effectively. This certainty is crucial for maintaining high standards of patient care and safety.

The Importance of Accreditation in Medical Physics Education

Accreditation is a formal recognition that an educational program meets established standards of quality. This process is typically carried out by recognized accrediting bodies and is essential for maintaining the credibility and reputation of medical physics programs.

1. **Ensuring Educational Quality**

   Accreditation ensures that educational programs adhere to rigorous standards of quality. Accredited programs undergo regular evaluations to maintain their status, ensuring continuous improvement and adherence to best practices.

2. **Student Confidence**

   Students enrolled in accredited programs can be confident that they are receiving a high-quality education that will be recognized by employers and professional bodies. This confidence is crucial for attracting and retaining talented students.

3. **Professional Certification**

   Accreditation is often a prerequisite for professional certification. Graduates from accredited programs are typically eligible to sit for certification exams, which are essential for professional practice in many regions.

Benefits of Harmonization, Standardization, and Accreditation

1. **Improved Educational Outcomes**

   Harmonization, standardization, and accreditation lead to improved educational outcomes by ensuring that all programs meet high standards of quality. This results in better-prepared graduates who are capable of meeting the demands of the profession.

2. **Enhanced Professional Practice**

   When educational standards are harmonized and standardized, medical physicists are more likely to engage in best practices and continuous professional development. This leads to enhanced professional practice and improved patient outcomes.

3. **Global Consistency**

   These processes ensure global consistency in medical physics education, making it easier to compare programs and qualifications across different regions. This consistency is crucial for global collaboration and mobility.

Challenges in Implementing Harmonization, Standardization, and Accreditation

There is a huge disparity in economic, social, educational standards across the globe. Some countries, regions are highly developed and has high standards of education as well healthcare system and therefore it is quite difficult and challenging to achieve perfect harmonisation, however efforts are put to have a minimum standard and uniformity. In tis direction IOMP and IAEA are working in collaboration and have brought out many guidelines for harmonisation, standardising and accreditation of medical physics education.

1. **Diverse Educational Systems**

   Different regions and countries have diverse educational systems, making it challenging to implement uniform standards. Overcoming these differences requires significant coordination and cooperation among various stakeholders.

2. **Resource Limitations**

   Implementing and maintaining harmonization, standardization, and accreditation processes can be resource intensive. Institutions may face challenges in allocating the necessary resources for these activities.

3. **Resistance to Change**

   Institutions and individuals may resist changes to established practices and curricula. Overcoming this resistance requires effective communication and demonstrating the benefits of these processes.

Strategies for Effective Implementation

1. **Stakeholder Collaboration**

   Collaboration among professional organizations, academic institutions, healthcare facilities, and regulatory bodies is essential for effective implementation. Stakeholders must work together to develop and enforce standards that meet the needs of the profession.

2. **Regular Review and Updates**

   Educational standards and accreditation criteria should be regularly reviewed and updated to reflect advancements in the field and emerging best practices. This ensures that programs remain relevant and effective.

3. **Capacity Building**

   Efforts should be made to build the capacity of institutions to implement and maintain harmonization, standardization, and accreditation processes. This includes providing training, resources, and support to educators and administrators.

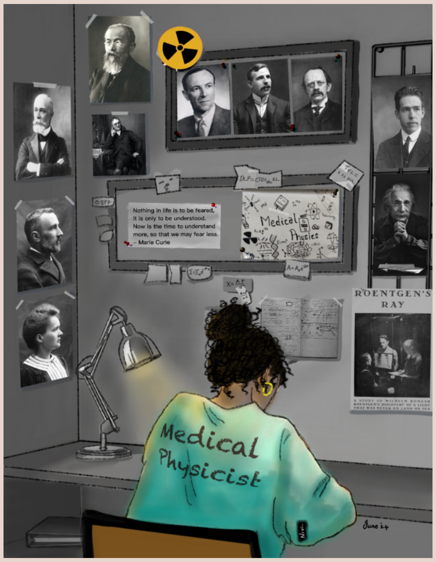
4. **Global Initiatives**

   Global initiatives, such as those led by the International Organization for Medical Physics (IOMP) and the International Atomic Energy Agency (IAEA), can play a crucial role in promoting harmonization and standardization. These initiatives can provide guidelines, resources, and support to institutions worldwide. The IAEA has been instrumental in supporting medical physics education in developing countries through its Human Health Division. By providing educational resources, training programs, and fellowships, the IAEA helps to raise the standards of medical physics education globally.

Conclusion

Harmonization, standardization, and accreditation are essential processes for ensuring the quality and consistency of medical physics education. These processes provide numerous benefits, including improved educational outcomes, enhanced professional practice, and global consistency. While there are challenges to implementation, effective strategies and collaboration among stakeholders can overcome these obstacles. As the field of medical physics continues to evolve, the importance of these processes will only increase, ensuring that educational programs remain relevant and capable of preparing professionals to meet the demands of modern healthcare.

THREE CHEERS



International Organisation for Medical Physics (IOMP) organized a poster competition for the International Day of Medical Physics IDMP-2024 with the theme "Inspiring the next generation of Medical Physicists". **Ms. Lavanya Murugan**, Medical Physicist & RSO, Rajiv Gandhi Government General Hospital and Madras Medical College, Chennai won the contest. Lavanya elaborates, "Everyone experiences uncertainty about their knowledge, future and career at some point. Believing in ourselves is the first step to achieving our goals". She further says,"The individuals whose photos adorn the wall were once in our shoes, grappling with doubts and questioning their abilities. Yet, they persevered, never giving up and ultimately inspiring us in the field of radiation". She indicates that it is a digital art piece and she gave up the dream of becoming an artist for the medical physics profession. Congratulation!

THREE CHEERS

Prof. Sunil Dutt Sharma, RP&AD, BARC, Mumbai received Mrs. Saraswati Pendse Oration Award 2024 of AMPI Western Chapter. This award was bestowed to him on 30th March 2024 during Annual Conference of AMPI Western Chapter organised at SJS Hospitals, Shirdi, Maharashtra.

MEDICAL PHYSICS AND RADIATION SAFETY ARE RADIOLOGICAL SCIENCES IN A HOSPITAL ENVIRONMENT

Prof. Dr. Ramamoorthy Ravichandran
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Association of Medical Physicists of India (AMPI) is founded in 1976, and as a founder member the author (RR) had always worked at institutional level for professional status issues in premier institutions such as CMCH, Vellore; KMIO, Bangalore; Royal Hospital, Muscat; and CCHRC, Silchar. With trainings at major research centres like BARC, Mumbai; INMAS, AIIMS, Delhi; and NIMHANS, Bangalore, and more than a decade served in middle-east country Oman, RR had involvement in many clinical projects and implemented MP Services from minimum level to high standards. It was highlighted by various editorials and lead articles that more than 20 institutions in India are now offering post graduate degree/diploma in medical physics and there is urgent need for bringing medical physics clinical services and education under some national regulation[1,2]. Medical Physicists are defined as health care professionals under allied sciences, with defined responsibilities in a hospital environment. In the global scenario, it is well accepted that many hospital physicists got recognition for their MP services by their significant contributions in their own departments. They have also brought feathers to the profession. Training good doctors and other health professionals in physics and radiation safety forms a scientific contribution even in non-teaching set up. In a staff interaction set up for radiation therapy, radiology and nuclear medicine medical physicists' scientific role have been explained while discussing resources and status issues[3]. In a remote far north eastern Assam state, the author took up a challenge to set up a premier cancer hospital, in a rural set up[4], and completed 8 years since 2016. Now an infrastructure of one telecobalt, one state of the art linear accelerator, HDR brachyunit, CT simulator, conventional simulator, 3 medical physicists relating to radiation oncology are in place. In beginning of 2024, PET CT, and SPECT/Gamma Camera imaging clinical services in nuclear medicine department added. One of our physicists got RSO certified, went to another district (Darang, Assam) to a higher position on completing 6 years' service. We got approval for MP residency program also at CCHRC. It was taken almost 6 years to convince the administration that RSO is an ex-cadre post and not a promotional position.

By this communication the author wants to share that in most of the present situations, RSO is separately recruited to fulfill regulatory needs, and when the RSO leaves, the institution is put into non-compliance situation. RSOs thus recruited, by their position, does not give priority to clinical services, nor give guidance to juniors. Medical physicists are left to only TPS planning work, and their scientific knowledge development seldom take place, thereby gives rise to the status issues in the clinical environment. In the above context, in the recent past, two major steps have been implemented in Silchar. CCHRC has accepted ICMR Research Scales for medical physicists, and a staff MP starts at Scientist B, and gets higher level based on number of years, and assessments. One of our MP got promoted. With Ph.D.s they can grow further. Second one, all the medical physicists during their service, within 3 years after probation shall comply with RSO certification of AERB as an obligatory need per Cadre & Recruitment Rules (Medical Physicists) 2024. Parity is expected among MPs irrespective of where they are trained, and RSO is not a supervisory person to medical physicists, he will be responsible for Regulatory Needs of AERB and any one of them can be nominated by administration. In most of the regional centres medical physicists are recruited with RSO certification only. As Medical Physics and Radiation Safety are to be looked as two sides of a coin and therefore they have complimentary roles in terms of implementation. This will help in maintaining standards in clinical services by medical physicists.

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THREE CHEERS

Dr Misba Hamid Baba, Research Officer, Department of Radiological Physics & B.E, Sher-I-Kashmir Institute of Medical Science, Srinagar, J & K has been awarded Ph.D. by GLA University, Mathura in December 2023. The topic of her thesis was **"A study on optimization and verification of radiotherapy treatment planning in curative and palliative setup for better delivery of radiation therapy"**. She was also awarded with the Best Presentation award of IOMP during the International Conference on Medical Physics, December 2023, Mumbai for her research titled "In-house fabrication of an ergonomic prone breast board as an innovation in medical physics for better delivery of radiation therapy in early-stage breast carcinoma". Congratulations!

Sri Tarani Mondal, Medical Physicist, Dept. of Radiation Oncology, Cachar Cancer Hospital and Research Centre, Silchar, Assam has been promoted as Senior Medical Physicist (grade ICMR Scientist C). Congratulations !

Dr Subhas Haldar, Chief Medical Physicist, Dept. of Radiation Oncology, Smt. Jayaben Mody Multispecialty Hospital, Ankleshwar, Gujarat has been awarded PhD by GLA University, Mathura in August 2024. The title of his thesis was **"A study on advancement and modification in breast and chest wall radiotherapy planning, dosimetry and dose-volume constraints on evaluation for better clinical practice"**. Congrats !

Dr. Ravi Kant, Assistant Professor, Deptt. of Medical Physics, Dept. of Radiation Oncology, Himalayan Institute of Medical Sciences, Dehradun has been awarded Ph.D. Degree by Swami Rama Himalayan University in July 2024. The Tile of his thesis was **"dosimetric evaluation in carcinoma lung by intraluminal brachytherapy and correlation in phantom model"**. Earlier he was awarded with Young Scientist Award for his oral presentation at the 15th Uttarakhand State Science & Technology Congress in 2022. Congrats !

Dr Vysakh Raveendran, Medical Physicist, ACTREC, Proton Therapy Centre, Navi Mumba has been awarded Best Poster Award at the School of Hadron Therapy at the International Centre for Theoretical Physics (ICTP), Trieste, Italy during April 2024. Congratulations!

CORDON

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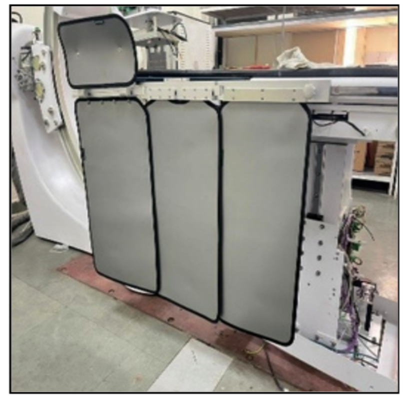
CORDON By Horizon Healthcare Solutions is the leader in India's Radiation Protection Solutions, offering a comprehensive range of wearables and non-wearables that shield medical professionals from harmful scattered radiation. By having two state-of-the-art manufacturing plants in New Delhi and Mohali, Punjab, we can guarantee world-class production standards while addressing various radiation protection needs.

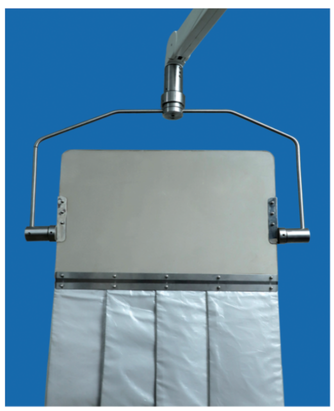
Cordon Radiation Protection Apron
- Available in Lead-Lite and Lead-Free material
- Flexible and Crack-Free
- Customization
- 30+ choices of color

Cordon Mobile Lead Barrier
- Available in various sizes of Lead Glass window
- Lead Equivalency: 1mmPb/2mmPb
- Customization



Cordon X-Ray Table Mounted Curtain
- Standard Lead Equivalency: 0.5mmPb
- Customization

Cordon Radiation Protection Eyeglass
- Available in Fit Over and Regular Fit Type
- Variety of Models Available
- Glass and Acrylic Based Models



Cordon Lead Acrylic Suspension Arm
- Available in Ceiling and Mobile Model
- Customization

DOSE-i: Digital Dosimeter
- Small and Lightweight
- Easy to read Display
- Easy to operate

MEDICAL DEVICES ISO ISO 13485:2016 QUALITY MANAGEMENT

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राष्ट्र की सेवा में परमाणु भा प अ कें BARC ATOMS IN THE SERVICE OF THE NATION

Manufactured By: Horizon Healthcare Solutions
Address: B-113, Third Floor, DDA Shed, Okhla Industrial Area, Phase-1, New Delhi-110020
Email Id: admin@horizonhealthcare.in
Phone No.- 011-47597037, 9310780439

Klarity AccuTRAK™ SGRT System

SEE THE COLOR. HIT THE TARGET.

PATIENT POSITIONING
MOTION MANAGEMENT
RESPIRATORY GATING

Klarity®
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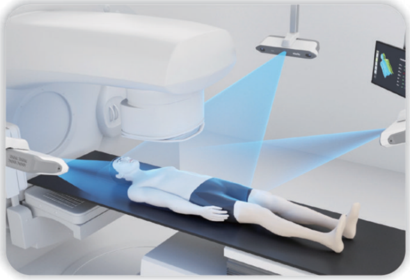
HD Structured Light Camera
An advanced camera system offers exceptional precision *for tracking the skin surface* during treatment, especially effective for tracking skin of diverse colors, ensuring high accuracy regardless of skin tone.



Enhance your Radiotherapy Work Flow
Highly compatible & User-friendly SGRT System streamlines the Radiotherapy process, enabling safer, more precise and efficient treatment. SGRT *optimizes the patient set-up work flow* for maximum efficiency.

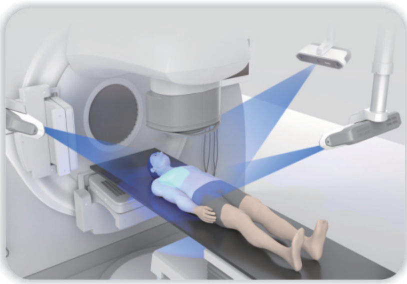
Sub-Millimeter Accuracy
With sub-millimeter accuracy SRS solutions, our system *automatically completes region-of-interest (ROI) selection without the need for manual delineation*, streamlining the treatment process and reducing the risk of errors.

A Visual Surface Color Prompt for quick and accurate verification and correction of patient position that provides clear visual cues to indicate the desired position and can be easily adjusted to preset thresholds for six-degree position correction.

Our system features **advanced motion monitoring capabilities**, enabling continues tracking of patient position in real-time.

Our system includes **Advanced Respiratory Gating capabilities,** *supporting both free breathing (FB) and deep inspiration breath hold (DIBH) techniques***.**

SBRT Solution with Motion Management
An advanced motion management, ensuring sub-milimeter accuracy for precise and effective treatment delivery. Additionally, our system supports 4DCT and DIBH techniques.



Single-Camera/Three Camera Configuration Solution (For CT sim room & treatment delivery room / For treatment delivery room)
Utilized & installed in GE / Siemens / Philips Large aperture CT, ELEKTA Infinity Linac & VARIAN Triology.

HIGH VERSALITY
Multiple RT applications, including SRS, SBRT, Particle Therapy, and more
Various treatment sites including intracranial, breast, abdomen and more

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