

Editorial

Medical Physics.

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Medical physics is a branch of applied physics that is dedicated to the application of physics principles and techniques to the field of medicine. It plays a crucial role in ensuring the safety and effectiveness of medical procedures and contributes to advancements in the diagnosis and treatment of various medical conditions. Medical physics has its roots in the early discoveries of X-rays by Wilhelm Roentgen and the radioactive properties of certain elements, notably those discovered by Marie Curie.

Over time, medical physics evolved, encompassing various specialized areas, including diagnostic radiological physics (which focuses on the development and maintenance of diagnostic imaging equipment, ensuring the safety and quality of medical images), radiation therapy physics (collaborating with oncologists to plan and deliver precise radiation treatments for cancer patients), nuclear medicine physics (overseeing the safe use of radioactive materials and developing imaging techniques like PET scans), and medical health physics (working to safeguard patients and healthcare workers from ionizing radiation's potentially harmful effects, monitoring exposure, and establishing safety protocols).

Medical physicists play a multifaceted role in healthcare, encompassing quality assurance, treatment planning, dosimetry, research and development, education and training, and regulatory compliance. They conduct essential quality control tests on medical equipment to ensure safe and accurate diagnostics and

treatments. In radiation therapy, they calculate optimal radiation doses to target cancer cells while minimizing harm to healthy tissue. Additionally, medical physicists measure and ensure the precise delivery of radiation doses. Their involvement in research and development advances medical imaging and treatment technologies. They also educate and train healthcare professionals, contributing to patient safety and the overall quality of care, while certifications from organizations like the American Board of Radiology (ABR)¹, International Atomic Energy Agency (IAEA)², International Organization of Medical Physics (IOMP)³, etc. validate their expertise, further ensuring effective and safe practice.

The role of many national organizations, including, but not limited to, Pakistan Nuclear Regulatory Authority (PNRA)⁴, Pakistan Organization of Medical Physicists (POMP), etc., has indeed been remarkable regarding the prioritization of patient safety and well-being through this field.

The International Organization for Medical Physics (IOMP) annually observes the International Day of Medical Physics (IDMP) on November 7 to raise awareness of the vital role played by medical physicists for the benefit of patients. This date is significant because it marks the birth of Marie Sklodowska-Curie, a pioneer in radioactivity research, on November 7, 1867. This year's IDMP theme, "Standing on the Shoulders of Giants"³, pays homage to the contributions of medical physics pioneers like Wilhelm Roentgen and Marie

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Curie. It emphasizes the need for contemporary medical physicists to respect their predecessors' accomplishments and build upon them.

To celebrate IDMP in Pakistan, POMP, with the help of PNRA and institutes of higher education, organizes events and activities that promote awareness of the field of medical physics. This involves seminars, workshops, educational programs, and discussions on the impact of medical physics on the country's healthcare system. Additionally, recognizing the contributions of local medical physicists and encouraging collaboration among professionals is part of the celebration.

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