

EDITORIAL FROM CO-EDITORS-IN-CHIEF

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Advancing Medical Physics in an Era of Innovation, Intelligence, and Global Collaboration

Welcome to Volume 14, Issue 1 (2026) of *Medical Physics International (MPI) journal*, the official journal of the International Organization for Medical Physics (IOMP). This issue reflects the continued evolution of medical physics as a scientific discipline, a healthcare profession, and a global community committed to improving patient care through innovation, evidence-based practice, education, and international collaboration.

The contributions featured in this issue demonstrate the breadth and vitality of contemporary medical physics. From radiation dose optimization and adaptive radiotherapy to artificial intelligence (AI), machine learning, quality assurance, and educational innovation, the articles collectively underscore the expanding responsibilities of medical physicists in an increasingly technology-driven healthcare environment.

Patient safety remains at the heart of our profession. The issue opens with an important investigation into inter-centre variability in computed tomography (CT) radiation doses in Nigeria, highlighting the need for protocol harmonization, optimization strategies, and the establishment of locally derived Diagnostic Reference Levels (DRLs). Such studies are particularly valuable in low- and middle-income countries where the expansion of advanced imaging technologies must be accompanied by robust quality assurance and radiation protection programmes. The findings reinforce the critical role medical physicists play in ensuring that technological advancement translates into safer and more effective patient care.

Artificial intelligence continues to reshape every aspect of healthcare, and medical physics is no exception. The professional article, *Medical Physicists in the Age of AI: From Quality Assurance to Governance Assurance*, presents a timely perspective on how our profession is evolving beyond traditional equipment quality assurance toward broader responsibilities in AI validation, lifecycle monitoring, governance, and ethical oversight. As AI-enabled medical devices become increasingly integrated into clinical practice, medical physicists are uniquely positioned to ensure that these technologies remain safe, transparent, equitable, and clinically effective. This transition represents one of the defining opportunities for our profession in the coming decade.

This issue also showcases remarkable advances in radiation oncology and diagnostic imaging. Contributions on online adaptive radiotherapy, Monte Carlo modelling for linear accelerator commissioning, boron neutron capture therapy dosimetry, breast imaging optimization using machine learning, ultrasound quality assessment, and CT dose optimization demonstrate how computational science, advanced modelling, and data-driven methodologies continue to improve clinical decision-making and treatment outcomes. Together, these articles exemplify the multidisciplinary nature of modern medical physics and the increasing convergence of physics, engineering, computer science, and medicine.

Equally inspiring is our Educational Topics article, *For the Love of Medical Physics and Football*, which illustrates how innovative teaching approaches can attract and inspire the next generation of medical physicists. By connecting fundamental physics concepts with the world's most popular sport, the authors demonstrate that education can be both engaging and scientifically rigorous. Such creative educational initiatives are essential for strengthening the future workforce and expanding awareness of the diverse career opportunities available within our profession.

Finally, we are pleased to include a book review on *Understanding Crisis Communication*, a reminder that scientific excellence alone is insufficient without effective communication. Whether communicating with patients, policymakers, healthcare professionals, or the public, medical physicists must increasingly combine technical expertise with clear, evidence-based communication, particularly in an era where misinformation can spread rapidly.

As Co-Editors-in-Chief, we extend our sincere appreciation to all authors, reviewers, and members of the Editorial Board whose dedication and professionalism have made this issue possible. We are equally grateful to the global medical physics community for its continued support of *Medical Physics International*. Your commitment to scientific excellence, education, mentorship, and international cooperation continues to strengthen our profession and improve healthcare worldwide.

We hope the articles in this issue stimulate new ideas, encourage collaboration across regions and disciplines, and inspire continued innovation in research, education, and clinical practice. Together, we remain committed to advancing medical physics for the benefit of patients and society.

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