Medical Physicists' contribution to high quality care.

Karen Christaki

Dosimetry and Medical Radiation Physics Section
Division of Human Health
What is a Medical Physicist?

The contribution of clinically qualified Medical physicist to high quality care.

Medical Physics challenges

Who can help?
What is a Medical Physicists?
Medical physicist are highly qualified health professionals, with an advanced postgraduate university degree, such as MSc or PhD, followed by specialized clinical training of at least 1 year.

Essential medical physics specialties:

- Radiology Physicist: Medical imaging physics that includes diagnostic and interventional radiology (DIR) procedures.
- Nuclear Medicine Physicist: Radionuclide procedures.
- Radiation therapy physicist.
- Medical health physics: radiation protection in medicine.
The contribution of clinically qualified Medical physicist to high quality care.
Role of the medical physicist

- Installation design, technical specification, acceptance and commissioning of equipment;
- Radiation safety and protection of patients, staff and the general public;
- Radiation dosimetry of radiation sources and patients;
- Optimization of the physical aspects of procedures;
- Quality management of the physical and technical aspects of radiation therapy, such as:
  - Development of institutional policies and procedures for the safe and effective use of radiation;
  - Establishing QA programmes and performing QC;
  - Performing risk assessments and identifying potential radiation emergencies.
As a professional in physics, a CQMP is able to identify problems and formulate strategies for their solution, interpret new or non-standard information, evaluate unusual situations in a scientific way, communicate scientific opinions clearly and accurately, recognize erroneous situations and take appropriate corrective actions, and recognize their own limitations in knowledge and skills.
Medical Physics Challenges
Medical Physics Africa Survey: education level

- **BSc**: 9 (10%)
- **MSc**: 55 (57%)
- **PhD**: 32 (33%)
Medical Physics Africa Survey: clinical training

Have you had a clinical training before working independently as a medical physicist?

Clinical training

- No: 24 (25%)
- Yes, less than 1 year: 19 (20%)
- Yes, 1 year: 23 (24%)
- Yes, 2 to 4 years: 16 (17%)
- Yes, 2 years: 14 (14%)
Medical Physics Africa Survey: salary

Salary

- < 1 KU$: 12%
- 1 - 3 KU$: 17%
- 3 - 6 KU$: 14%
- 6 - 10 KU$: 15%
- 10 - 15 KU$: 16%
- 15 - 20 KU$: 5%
- 20 - 50 KU$: 16%
- 50 - 100 KU$: 2%
- > 100 KU$: 2%
- Blank: 1%
Medical Physics Africa Survey: challenges

List the 2-3 main professional challenges you are facing in your practice.
Who can help?
Who can help?

Department of health

Department of education
Who can help?

Medical Physics Societies.
IAEA: Raising awareness of medical physics

- The role of the medical physicist is clearly identified in the BSS.

3.167. In accordance with para. 3.154(d) and (e), the **medical physicist** shall ensure that:

(a) All sources giving rise to medical exposure are calibrated in terms of appropriate quantities using internationally accepted or nationally accepted protocols.

**Radiological reviews**

3.182. Registrants and licensees shall ensure that radiological reviews are performed periodically by the radiological medical practitioners at the medical radiation facility, in cooperation with the medical radiation technologists and the **medical physicists**. The radiological review shall include an investigation and critical review of the current practical application of the radiation protection
IAEA: Raising awareness of medical physics

- Define the Roles and Responsibilities of medical physicists

HHS 25 - Define appropriately and unequivocally the roles and responsibilities of a CQMP in specialties of medical physics related to the use of ionizing radiation, such as radiation therapy, nuclear medicine, and diagnostic and interventional radiology.

Establish criteria that support the harmonization of education and clinical training worldwide, as well as to promote the recognition and professionalism of medical physics as a profession internationally.
IAEA: Raising awareness of medical physics

- Development of Awareness Material

Medical Physics: Safety and Accuracy in Radiation Medical Procedures

Medicine has undergone remarkable developments and highly advanced technology is used in imaging and treatments of diseases with radiation. Medical Physicists play a fundamental role in the development, commissioning, management and application of such technologies, and ensure the quality of imaging and treatment procedures, while minimizing radiation risks to patients.

What is a medical physicist?

Medical physicists are highly qualified health professionals with an advanced postgraduate university degree such as MSc or PhD, followed by specialized clinical training in one or more medical physics disciplines, such as radiology imaging. They are members of comprehensive medical teams in radiation medicine.

What do medical physicists do?

They contribute to the safe and wise use of radiation to achieve the best potential for prescribed medical procedures for diagnosis or therapy. They ensure radiation doses and associated risks are properly assessed, especially for pregnant women and children. Medical physicists play an important role in radiation protection education and training of medical professionals, and participate in research and development to improve patient care.

How do medical physicists ensure that radiation medical procedures are safe?

Medical physicists optimize the delivery of radiation procedures prescribed by medical practitioners. They do so by performing accurate measurements and calculations, analyzing the expected benefit and the potential risks, the use of radiation, and contributing to the development and implementation of quality assurance programmes.

What can go wrong without a medical physicist?
IAEA: Raising awareness of medical physics

- Define staffing levels for adequate medical physics support
What is a Medical Physicist?

The contribution of clinically qualified Medical physicist to high quality care.

Medical Physics challenges

Who can help?
Thank-you

Dosimetry and Medical Radiation Physics Section-IAEA