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Medical Physics:
Ensuring Safety and Accuracy in Radiation Medical Procedures

IOMP

Medicine has undergone remarkable developments and highly advanced technology is used in imaging and treatment 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 are the qualifications of medical physicists working in clinical settings?

A medical physicist is a highly qualified health professional, with an advanced university degree, such as MSc or PhD, followed by specialized clinical training in one or more medical physics disciplines, such as radiation oncology, diagnostic and interventional radiology, nuclear medicine and radiation protection.

A professional body/health authority certifies the qualifications of the medical physicist. Continuous professional development is necessary for medical physicists to remain up-to-date with rapid technological advancements.



Why are medical physicists essential to hospitals?

According to the International Basic Safety Standards and regulations in most countries, medical physics services are required in hospital settings using radiation sources. In addition to the core tasks related to patient care, medical physicists:

- Define the technical specifications of new equipment to reflect a facility's clinical requirements and ensure that the newly installed equipment operates as specified throughout its expected life. Medical physicists define and supervise the maintenance services for radiological equipment.
- Ensure that regulatory requirements relating to radiation protection are fulfilled, thus avoiding potential radiation incidents and near accidents.

The services mentioned above contribute to the cost-effective operation of the facility, as well as patient and staff safety.



What are the resources needed?

Medical physicists' duties, such as quality control, radiation protection and optimization of procedures, require the use of specialized tools and instrumentation. According to international recommendations, there should be an adequate number of medical physicists to service all the disciplines in radiation medicine.



What can go wrong without a medical physicist?

Without a clinically qualified medical physicist, the implementation of medical radiation procedures can lead to the following events:

- The patient may receive an incorrect dose which can jeopardize the success of the medical treatment or the quality of diagnosis
- the medical staff and the public might be in danger of radiation exposure

In extreme cases, this could lead to a serious accident.

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