



Profile and position of the Medical Physics Expert

Summary

The **Medical Physics Expert** is a **medical specialist in health care** with comprehensive knowledge of physics and associated mathematics and their application in health care. The Medical Physics Expert ensures that **existing and future medical devices and all techniques** are used effectively, safely, efficiently and in an optimized manner for the **diagnosis and treatment of patients**.

Background and Positioning

The Medical Physics Expert (MPE)² is a physicist with postgraduate training who works in a clinical environment. After a university MSc degree in physics and associated mathematics¹, he or she has completed a four-year training as a Medical Physics Expert (and is registered by the Foundation for MPE Education & Training (OKF)). Recognition as a medical support specialist is valid for a period of five years, after which re-registration is required. The title of MPE is legally protected by Article 34 of the Dutch BIG Act concerning professions in the Dutch Health Care system.

The training of the physicist provides extensive expertise in the fields of mechanics, acoustics and (ultra)sound, electricity and magnetism, ionizing radiation and nuclear physics, light and lasers, MRI, and in a broad sense conducting scientific research including experimental work, systems analysis and performing risk and incident analyses. The four-year advanced training as an MPE extends this knowledge to medicine, clinical practice and patient care.

With this broad knowledge of medical physics, biophysics and physiology, the MPE, as a medical physics expert² in specialist medical care, is able to contribute to and take joint responsibility for the diagnosis and therapy both of individual patients and patient groups. MPEs are employed in general hospitals, university medical centers, radiotherapy institutes, audiological centers and rehabilitation centers.

The MPE is a member of the medical staff of the healthcare institution. As a representative of the profession, the Society for Medical Physics in the Netherlands (NVKF) is a member of the Dutch Federation of Medical Specialists (FMS).

¹) Or an equivalent degree. See <https://www.stichtingokf.nl/vooropleidingen/> (in Dutch) for more details.

²) Medical Physics Expert is referred as 'klinisch fysicus' in the Netherlands. The title MPE is used in EU law (Directive 2013/59/EURATOM of the Council, 5/12/2013).



Tasks and responsibilities

As an expert, the MPE is responsible for the adequate and responsible application of medical physics principles in healthcare. This includes diagnosis and therapy such as in audiology and radiotherapy, as well as advanced patient monitoring, diagnosis and therapy with ionizing radiation and other physical agents. The MPE's knowledge in the field of physics, measurement techniques and the processing and interpretation of measurement data means that the MPE bears responsibility for the correct interpretation of image information and physiological data. The MPE also oversees the correct use of physical-mathematical principles and assesses the value of the technology of medical devices and/or applied software. The MPE has the authority to act on or advise on radiation physics issues surrounding medical exposure.

The task of the MPE is to optimize and guarantee the deployment, effectiveness and safety of the existing medical-technological infrastructure. Depending on the subspecialty of the MPE, the nature of the institution and the working method indicated by this institution, the MPE can act in the role of scientist, innovator, policy maker, medical advisor, manager, supervisor or a combination of these roles. In specific cases, the MPE can also act as primary practitioner and coordinator. The MPE in a healthcare institution takes on the role of medical technology officer and often that of Radiation Protection Expert as laid down in the Radiation Protection Ordinance. The MPE is trained in explaining and educating about medical physical aspects of care to both medical and nursing staff, and patients.

Furthermore, the MPE has a central role in drafting (medical) policy insofar as this is related to the application of medical physics. Close involvement in the life cycle of the medical-technological infrastructure of the institution is part of the MPE's range of duties. Professional knowledge and scientific training of the MPE contribute to the fact that the MPE, together with other professionals, develops guidelines regarding all aspects of medical physics. Due to the MPE's broad knowledge, often transcending the MPE's specialism, he or she is able to make connections that would otherwise be overlooked.

The area of expertise of the medical physicist is broad and subject to constant change. The training in basic sciences such as physics and mathematics and continuous training in the field of medical physics, enable the MPE to respond quickly to new developments.