IPEM Spending Review Submission 2025 FINAL

Summary

IPEM represents the specific group of healthcare scientists working in Medical Physics and Clinical Engineering (MPCE), who represent around 1% of NHS staff but directly contribute to nearly half of all diagnoses and treatments.

Both professions are essential for advancing medical technology and ensuring that patients receive the highest quality of care.

The medical physics and clinical engineering workforce is integral to the effective delivery of advanced healthcare services. In radiotherapy, they ensure the precise targeting of tumours using sophisticated equipment such as Linear accelerators, which require continuous support and maintenance. For MRI scanners, these professionals manage the safety protocols and operational efficiency, ensuring that the equipment functions correctly and safely. They also play a crucial role in the quality assurance of ultrasound devices, guaranteeing accurate diagnostics. Beyond equipment maintenance, they are involved in training new staff, ensuring a well-prepared workforce, and leveraging data science to enhance patient outcomes and streamline operations. This multifaceted support is essential for maintaining high standards of patient care and advancing medical technology.

The most urgent step to take is tackling the workforce shortages in Medical Physics and Clinical Engineering.

To fill current vacancies alone, the MPCE workforce across the UK requires at least 1,000 additional staff.

Whilst recent investment announcements on radiotherapy equipment are welcome, they will only help to clear the existing backlog of overdue replacements, but not provide for a rolling programme as more machines reach the end of their optimal life. A rolling programme of replacement should be put in place.

Background

IPEM is a charity and professional body with a mission to improve health through Physics and Engineering in Medicine. Our vision is one in which innovation drives improvements in diagnosis, treatment and care, transforming the lives of patients. Our members, the professional community of medical physicists, clinical engineers, scientists and clinical technologists working in hospitals, academia and industry around the world are the people who deliver this for the NHS and more widely. They undertake statutory duties in cancer, care closer to home and diagnostic pathways.

IPEM works in partnership with a wide range of other organisations in the fields of healthcare, science, technology and engineering and is the main professional body representing the specific group of healthcare scientists working in Medical Physics and

Clinical Engineering (MPCE), who represent around 1% of NHS staff but directly contribute to nearly half of all diagnoses and treatments.

Supporting Productivity and Safety Across Healthcare

IPEM welcomes the Government's AI Strategy. The integration of Artificial Intelligence and big data presents transformative opportunities for enhancing population health, diagnostics, and treatment programs. Notably, AI-driven technologies in diagnostic imaging can dramatically boost MRI scanning capacity and alleviate the workload on staff interpreting diagnostic images. This not only frees up valuable staff time but also significantly enhances overall productivity.

Other technologies leverage population data science to deliver targeted diagnoses for serious conditions, significantly improving chronic conditions and improving early cancer detection rates. Medical Physics and Clinical Engineering professionals, with their extensive education and training in scientific and mathematical techniques, risk-benefit analysis, optimisation methods, and regulatory compliance, should lead the deployment of this transformative technology program.

Apps are becoming increasingly popular among patients and the public, often developed through collaborations between health, industry and academia. Safeguarded funding for academic research and tech startups is crucial to drive the development of these new apps. Medical Physicists, Clinical Engineers and Clinical Scientists play a vital role in their development, ensuring quality assurance, which promises significant patient benefits. Many of these apps are being developed with and by Clinical Scientists and Engineers providing essential support to these industry partners nationwide. They offer regulatory guidance and assist developers in integrating their solutions into NHS systems.

A comprehensive long-term funding settlement is essential for regulators to manage the influx of emerging technologies effectively. Securing additional funding for the MRHA is crucial as new technologies demand robust yet balanced regulation that ensures safety without hindering innovation. IPEM continues to support and contribute to this work.

The most urgent step to take is tackling the workforce shortages in Medical Physics and Clinical Engineering.

To fill current vacancies, the MPCE workforce across the UK requires at least 1,000 additional staff. At the currently proposed rate contained in the most recent NHS Workforce Plan, and considering planned service expansion, the staffing shortfall would be expected to widen each successive year.

IPEM's official workforce statement, published in 2023, showed that, across all MPCE specialisms surveyed in recent years, there is an average 10% vacancy rate, ranging from 8-17% across the specialisms.

The professions we represent are facing significant recruitment and retention issues, with an ageing workforce. In some MPCE professions, the number of staff due to retire within the next 15 years is over 30%.

Simultaneously, IPEM data indicates that even in specialisms with a regular intake of trainees, the number entering the workforce is insufficient to sustain it in the mid to long term.

Supporting patients and professionals through investment

Staff working in Medical Physics and Clinical Engineering play crucial roles in healthcare by applying their expertise in physics, engineering, and technology to improve patient care.

Medical Physicists specialise in the application of physics to medicine. Their work includes:

- **Radiation Therapy**: Planning and ensuring the safe and effective delivery of radiation treatments for cancer patients.
- **Diagnostic Imaging**: Ensuring the accuracy and safety of imaging techniques like MRI, CT scans, and X-rays.
- **Quality Assurance**: Regularly testing and calibrating medical equipment to ensure it meets safety standards.
- **Research and Development**: Innovating and improving medical technologies and treatment methods

Whereas Clinical Engineers focus on the application of engineering principles to healthcare. Their responsibilities include:

- **Medical Device Management**: Overseeing the maintenance, calibration, and safety of medical devices.
- **Technology Integration**: Implementing and integrating new technologies into clinical practice.
- **Regulatory Compliance**: Ensuring that medical devices and technologies comply with regulatory standards.
- **Support and Training**: Providing technical support and training to healthcare staff on the use of medical equipment
- **Research and Development**: Innovating and improving medical technologies and treatment methods

Both professions are essential for advancing medical technology and ensuring that patients receive the highest quality of care.

The medical physics and clinical engineering workforce is integral to the effective delivery of advanced healthcare services. In radiotherapy, they ensure the precise targeting of tumours using sophisticated equipment such as Linear accelerators (Linacs), which require continuous support and maintenance. For MRI scanners, these professionals manage the safety protocols and operational efficiency, ensuring that the equipment functions correctly and safely. They also play a crucial role in the quality assurance of ultrasound devices, guaranteeing accurate diagnostics. Beyond equipment maintenance, they are involved in training new staff, ensuring a well-prepared workforce, and leveraging data science to enhance patient outcomes and streamline operations. This multifaceted support is essential for maintaining high standards of patient care and advancing medical technology.

The Medical Physics community has taken on the rollout of AI-based Advanced Acceleration Technology in MRI, which has the potential to significantly increase productivity and reduce waiting lists.

It is therefore essential that the current workforce is grown, with sufficient training and full qualified places available.

To facilitate this, investment is needed in training and education, including via HEIs and through providing supported and funded training and education time for both trainees and trainers. The cost of training varies considerably depending on the profession and the specific training pathway being taken.

Given the importance of the medical physics and clinical engineering workforce to the future sustainability of the NHS, it is concerning that IPEM hears many instances of members of staff who provide training being unable to set aside time to deliver that training due to other duties. It is important that training time is properly provided and protected, for both trainers and trainees.

IPEM welcomes the Government's investment in new scanners and radiotherapy equipment, as was highlighted in our pre-election Manifesto (see: ipem-manifesto-for-the-future-of-mpce.pdf). Reducing emissions through medical devices and technologies involves several key strategies. Firstly, investing in energy-efficient equipment can significantly lower the carbon footprint of healthcare facilities. For example, modern imaging devices and radiotherapy machines are designed to consume less power while maintaining high performance. Additionally, the adoption of digital health technologies, such as telemedicine and electronic health records, can reduce the need for physical resources and travel, thereby cutting emissions. Manufacturers are also increasingly focusing on sustainable practices, such as using recyclable materials and designing for longer equipment lifecycles. Encouraging these practices through incentives and regulations can further drive the healthcare industry towards a greener future.

According to IPEM’s recent Radiotherapy Census, there are currently at least 300 Linacs across the UK, as measured in the RT census. 22% of these are 10 years old

or older, and therefore due for replacement, but the currently announced investment will replace only around 25 machines, leaving many in use beyond their recommended lifespan. This can lead to longer waiting times and increased pressure on resources.

The Scottish Government has a £45 million rolling programme of ring-fenced capital funding for replacing Radiotherapy equipment. Whilst recent investment announcements are welcome, they will only help to clear the existing backlog of overdue replacements, but not provide for a rolling programme as more machines reach the end of their optimal life. The approach taken in Scotland should be replicated in England to address this.

The Government should invest in training current and future medical physicists and clinical engineers enabling them to identify, develop, commission, test and deploy low carbon solutions without compromising patient care or further stretching the wider workforce.

In the long term, it is crucial to support the establishment of a facility for generating medical radionuclides within the UK. Currently, the UK relies heavily on imports for essential radioisotopes, primarily sourced from South Africa and Europe. This dependency poses significant risks, as technical issues with aging reactors or geopolitical factors can delay or even halt the diagnosis and treatment of cancers, exacerbating cancer waiting lists. For instance, a shutdown in mid-2024 severely limited the availability of radioisotopes for nuclear medicine scans, adversely affecting patient care. With many global reactors set to be decommissioned by 2030, the UK's ability to produce medical radionuclides domestically is vital. This would not only benefit UK patients but also bolster the global supply chain. Additionally, the short half-lives of many medical radioisotopes necessitate prompt delivery post-production, making them particularly susceptible to supply chain disruptions.