MEDICAL PHYSICIST 2035

Vision Document of the Dutch Assiociation for Medical Physics (NVKF)

Medical Physicist 2035 >

Contents

The medical physicist on the road to 2035

Delivering appropriate medical technology for every patient, now and in the future. That is what the Dutch Association for Medical Physics (NVKF) stands for.

This vision document helps us articulate where we want to go. It ensures that our choices remain aligned with that shared direction, even as healthcare evolves under the influence of societal, economic and technological developments. In this way, the core of our profession remains strong and recognizable. With this document, we build on the Medical Specialist 2035 vision published by the Federation of Medical Specialists in June 2025.

Fundamental shifts

What the world will look like in 2035 is difficult to predict. Geopolitical developments and climate change will bring significant changes. What is certain, however, is that technology will play an even greater role than it does today, particularly in healthcare.

As healthcare demand grows and becomes more complex, while populations age and shortages of personnel and resources increase, medical technological solutions will become more indispensable than ever. The healthcare sector is facing fundamental shifts that directly affect our profession. This calls not for a wait-and-see approach, but for an ambitious vision. We must be willing to make choices and take the initiative ourselves.

Our direction is clear: appropriate medical technology for every patient. At the same time, we invest in the future of our profession by focusing on continuous professional development and sustainable employability.

Finding the right balance

With this vision document, we set our course towards 2035. It is an invitation to patients, fellow medical specialists, healthcare professionals, government bodies and industry partners to harness the power of medical technology together to ensure that healthcare remains high-quality and accessible.
Scientific evidence forms the foundation of our actions.

How this vision was developed

This vision document is the result of a carefully designed process. An important part of that process consisted of six roadshows held at locations across the country. During these meetings, the NVKF Board and its members engaged in discussions about the future of the profession.

The roadshows demonstrated the strong commitment within the association: more than half of all members actively participated.
In addition, discussions were held with a wide range of stakeholders, including the Ministry of Health, Welfare and Sport (VWS), the National Health Care Institute (Zorginstituut Nederland), the Dutch Patients Federation, hospital umbrella organisations, health insurers, and related scientific and professional associations.

Writing groups then developed the input from the roadshows and stakeholder discussions into texts based on the key themes identified. These texts were subsequently reviewed by a broad sounding board group, after which a core editorial team integrated them into one coherent document.
Finally, the Medical Physicist 2035 vision was formally adopted during the NVKF Board meeting in May 2026.

This vision describes the direction of the medical physicist towards 2035. The structure of the document is as follows. First, a concise environmental analysis is presented in The Landscape of Tomorrow. We then elaborate on four interconnected focus areas, based on our central ambition outlined in From Core Mission to Strategic Direction, which guide the development of the profession and the use of medical technology:

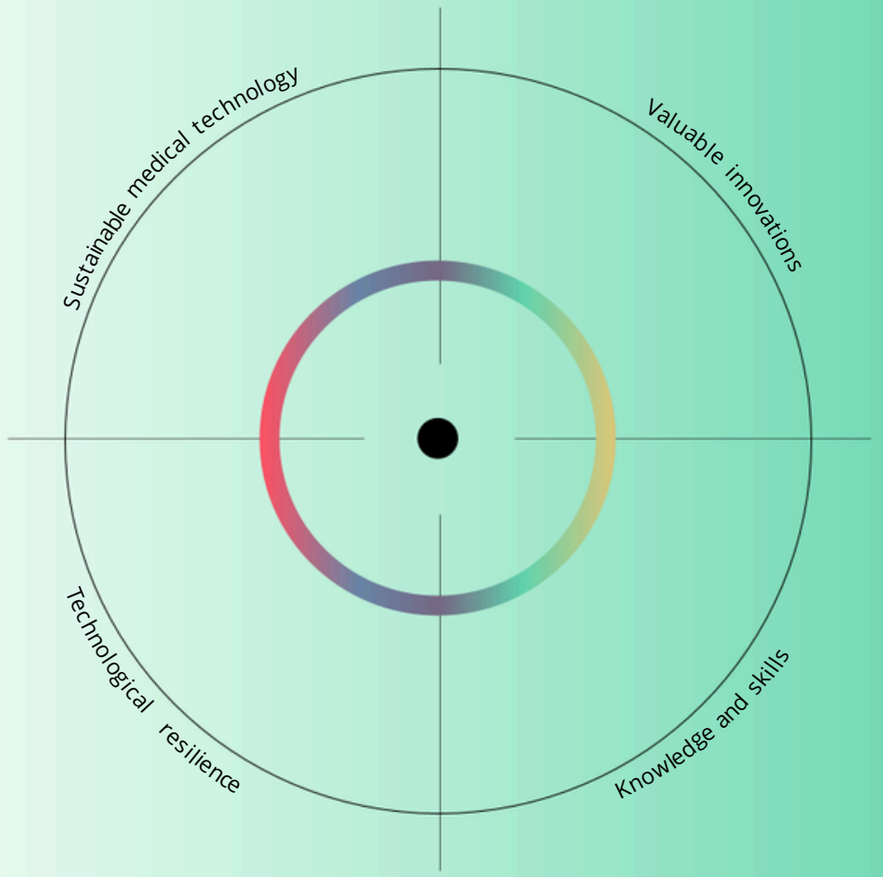
- Valuable innovations for the patient;
- Knowledge and skills for the future;
- Technological resilience;
- Sustainable medical technology for sustainable healthcare.

To strengthen coherence and readability, all focus areas follow the same structure. For each focus area, we describe:

- Our ambition for 2035;
- Why this focus area matters for the future of healthcare and our field;
- What we aim to achieve by 2035;
- The actions required from medical physicists, the NVKF and other stakeholders.

These concrete perspectives for action will be further developed over the coming year in the NVKF's multi-year policy plan.

We wish you much inspiration and an enjoyable read.
NVKF Board
June 2026



The Landscape of Tomorrow

Medical Physicist 2035 >

Economic, demographic and geopolitical developments, as well as climate change, have a profound impact on society and healthcare. Technological innovations are rapidly transforming diagnostics and treatment. Examples include the integration of AI into clinical processes and medical technology, as well as advances in data analytics and robotics.

The Integrated Care Agreement (IZA, 2022) and the Supplementary Health and Social Care Agreement (AZWA, 2025) identify these technologies and the ongoing digitalisation of healthcare as crucial for improving care and addressing resource shortages. As such, new technology is essential for delivering high-quality, accessible and affordable healthcare.

Societal and economic developments

Healthcare is facing increasing pressure due to population ageing, a growing burden of chronic disease and escalating workforce shortages. At the same time, patient expectations are changing. Patients seek greater autonomy, personalised care and digital support. Digital exclusion and social inequalities are increasing, meaning that factors such as education, income and living conditions play an increasingly important role in access to appropriate care and healthy living environments.
In addition, care is increasingly shifting to the home setting, while primary care is taking on a larger role. These developments make prevention, accessibility, equity and new forms of collaboration within and beyond the hospital more important than ever.

Healthcare expenditure in the Netherlands is projected to exceed €200 billion by 2050. This growth is driven by demographic developments, increasingly complex care needs, rising expectations from patients and society and new medical interventions made possible by innovative medicines and technologies.

To keep healthcare accessible and affordable, policy is increasingly focused on appropriate care, digital transformation and collaboration.

1 National Institute for Public Health and the Environment (RIVM), Zorggebruik en zorguitgaven, in: Trendscenario Volksgezondheid Toekomst Verkenning 2024, 2024. Available online
2 Netherlands Scientific Council for Government Policy (WRR), Kiezen voor houdbare zorg. Mensen, middelen en maatschappelijk draagvlak, WRR Report No. 104, The Hague: WRR, 2021. Available online

At the same time, public debate is shifting towards fundamental questions: which care should remain publicly funded, how should scarce resources be allocated, and what investments are needed to ensure the long-term sustainability of the healthcare system?

This creates a tension. Technology can help address workforce shortages and manage growing demand for care, but it also requires substantial investments in infrastructure, cybersecurity and training. This makes the smart and efficient use of resources essential.

Geopolictical and climate development

The global order is undergoing profound change. Wars, conflicts and increasing competition for access to rare raw materials, which are essential for technological innovation, continue to create tensions. Free global trade is coming under increasing pressure as trade restrictions expand and nations prioritise strategic and economic self-interest.

These developments are creating a new and uncertain economic reality characterised by constant change. As a result, the safe, more reliable and appropriate use of medical technology is becoming increasingly complex. Disruptions to infrastructure, interruptions in international supply chains and threats such as cyberattacks are becoming more likely.

The healthcare sector contributes to public health, yet it also has a significant impact on the environment and climate. In the Netherlands, healthcare accounts for approximately 7% of national CO_2 emissions. Over time, this environmental impact also affects population health and the sustainability of the healthcare system itself.

Medical technology plays an important role in this context. It contributes to more efficient and accessible care, but it also involves energy consumption, the use of scarce resources and dependencies within international supply chains. This requires thoughtful and integrated decision-making.

Technolocial developments

New medical technologies and applications are becoming available at an increasingly rapid pace. Examples include smart sensors, advanced decision-support systems and wearables that continuously or intermittently monitor and record health data.

Medical technology increasingly extends beyond physical devices. Software, data-driven algorithms, AI applications and cloud-based services are becoming equally important. Nearly every medical device generates data that contributes to building a comprehensive patient profile. At the same time, medical technology is becoming more closely integrated with other systems, such as the electronic patient record (EPR), creating complex technological ecosystems.

This extensive digitalisation offers significant opportunities, but also introduces greater risks related to interoperability, data quality, privacy and cybersecurity.

These developments are being accelerated by the rise of AI. Within imaging specialties such as radiology, AI is already supporting diagnostic processes. Beyond these fields, an increasing number of algorithms are becoming available as medical devices in their own right. The emergence of autonomous AI agents raises new questions. In the years ahead, we will therefore need to develop substantial expertise in the responsible implementation of AI within clinical practice.

The safe and effective use of technology requires a combination of technological expertise and clinical insight. New applications are only successful when they become an integral part of the care pathway. This requires not only innovation, but also the redesign of workflows, oversight and the organisation of care.

From core mission to strategic direction: Medical technology that shapes the future

In a rapidly changing world, where medical technology (MedTech) is becoming increasingly important and resources are growing scarcer, our core message remains unchanged:

Delivering appropriate medical technology for every patient, now and in the future.

We ensure the safe and effective use of appropriate medical technology in patient care, today, in 2035 and beyond.

Innovation, quality assurance, safe use and the evaluation of medical technology form the core elements of our profession. In doing so, we contribute to the quality and accessibility of healthcare and safeguard the availability of medical technology, including during times of crisis.
We do this as part of the primary care process, working alongside our fellow medical specialists. In this context, we ensure the safe use of valuable medical technology for the patient.

We also take responsibility at the organisational level. From a medical specialist perspective, we lead quality policy and the quality management system for medical technology across the healthcare organisation.

A core element of our work remains our statutory responsibility for the safe and responsible use of ionising radiation. This is where our field originated and it remains a fundamental part of our professional responsibility.

The inclusion of our profession in Article 3 of the Individual Healthcare Professions Act (Wet BIG) further strengthens the legal foundation of our professional practice. In doing so, we contribute to transparent and consistent quality assurance and patient safety.

3 Federation of Medical Specialists (FMS), Dutch Association of Hospitals (NVZ) and University Medical Centres of the Netherlands (UMCNL), Leidraad Medische Technologie in instellingen voor medisch-specialistische zorg [Guidance on Medical Technology in Specialist Healthcare Institutions], Richtlijnendatabase, 2026. Available online

Given these developments, flexibility is crucial. Rooted in our physical sciences and clinical expertise, we remain agile by continuously developing our knowledge and applying it where it creates the greatest value for patients, healthcare professionals and society.

As a result, we are expanding our role into new areas of healthcare where medical technology and medical physics expertise offer significant added value. At the same time, we consciously discontinue medical technologies and activities that do not sufficiently contribute to the accessibility and quality of care. Not everything that is technically possible, or has evolved historically, should necessarily continue.
In this way, we apply medical technology in a manner that aligns with the patient, the healthcare need and healthcare policy.

Building together

The combination of healthcare and technology, and the development of innovative and appropriate solutions for patients and healthcare professionals, makes our profession unique and valuable.

Our strength lies in our expertise and in the strong connections within our profession. We also work closely with partners who play a key role in the application of medical technology.
Within hospitals, we collaborate with all medical specialties and strategically apply our broad, cross-disciplinary perspective. At the national level, we actively seek collaboration with our fellow specialists within the Federation of Medical Specialists. We also strengthen our partnerships with patients, hospital boards, insurers, knowledge institutions, industry partners and government bodies.

In addition, we collaborate with other professional associations within the field of medical technology. We do so both through the Medical Technology Alliance and through direct professional networks.

We are also active in European and international organisations, such as the European Federation of Organisations for Medical Physics (EFOMP), the European Society for Radiotherapy and Oncology (ESTRO), the European Association of Nuclear Medicine (EANM), and the European Society of Radiology (ESR). Thanks to this strong national and international positioning, we play a central and connecting role within the field of medical technology.

Future-proof healthcare

The NVKF aligns itself with the three drivers of future-proof healthcare as described in the Medical Specialist 2035 vision:

- Putting people first
- Taking responsibility
- Giving attention to our own health and job satisfaction, and that of our teams

We have translated these drivers into three core principles that guide our future-oriented direction.

Putting people first, with technology as an ally

We ensure the availability of reliable and appropriate technology for every patient and healthcare professional. We do so in a way that aligns with the clinical challenge and takes account of financial and other relevant constraints.

For us, technology is not an end in itself, but a means to improve health, quality of life, efficiency and job satisfaction.
We contribute to labour-saving technologies and more efficient care pathways, including through the use of AI, automation and robotics. In doing so, we look beyond medical technology alone and adopt an integrated approach in which hardware, software, data and clinical application come together.
Both patients and healthcare professionals are at the centre of our solutions. We actively involve them throughout all phases of the technology lifecycle, introduce valuable medical technologies, foster trust in these technologies and transfer knowledge where appropriate.
In this way, technology becomes a true ally in healthcare.

Expanding responsibility

Not only individual patients and healthcare institutions rely on the responsible use of medical technology; society as a whole increasingly calls upon our expertise. As a result, the boundaries of our responsibility continue to expand.
Our involvement in medical technology extends beyond the walls of healthcare institutions. We actively contribute to care delivered outside the hospital, including medical physics services provided beyond the hospital setting. Where possible, we also contribute to prevention.

By rigorously assessing innovations for safety, sustainability and environmental impact, we help accelerate the adoption of promising technologies into clinical practice.
Our approach is always grounded in science. Through data and healthcare evaluation, we monitor the value of technology. We do this not only during implementation, but throughout the entire lifecycle, ensuring that healthcare remains efficient and future-proof.

Patients and healthcare professionals can rely on our expertise in the quality assurance of medical technology. We oversee organisation-wide quality systems and safeguard the safety of specific medical technological applications through continuous validation and monitoring. This will remain a priority in the future.

To fully realise the opportunities offered by medical technology towards 2035, a paradigm shift is required. Historically, the focus has been on achieving the highest possible quality for every technology, every patient and every situation. Moving forward, this will shift towards a risk-based and proportionate approach. In an era of scarcity, rising costs and increasing sustainability challenges, we must make more deliberate choices. Not everything can be available everywhere, at all times and for everyone.

This represents a transition from "the best possible technology for everyone" to "appropriate technology, used responsibly". This means that technological decisions will be assessed based on value, risk, societal impact and long-term sustainability.
To ensure the continued availability of medical technology, we also contribute to technological resilience and crisis preparedness. Risk-based practice, particularly when scarcity requires the acceptance of different risks than under normal circumstances, is an essential part of how we word as professionals.

A strong and attractive field

To maintain our engagement and passion, we invest in collaboration, education, knowledge sharing, and the knowledge and skills needed for the future. In doing so, we ensure that medical physicists remain agile and that our role can continue to evolve alongside healthcare, without leading to an unlimited expansion of responsibilities.

New responsibilities also require new priorities, clear boundaries, and, at times, the transfer or discontinuation of existing tasks.
We take care of ourselves by explicitly linking sustainable employability to the way our field develops. Professional agility can only be maintained when workload remains manageable. Our passion for technology must be sustainably balanced with the vitality and expertise needed to continue delivering high-quality patient care in 2035.

The rapid development of technology, combined with increasing regulatory demands and growing resource constraints, creates a dual challenge for the medical physicist: leading innovation while simultaneously meeting the high standards required for existing technologies and care processes.

We therefore strive to create a working environment in which medical physicists can thrive, with psychological safety, professional autonomy, and opportunities for innovation, research, teaching, and professional development.

By 2035, we will work in close multidisciplinary teams, supported by a culture of inclusive leadership, solidarity, and a critical approach to task allocation and role redesign.
Work will be distributed according to talent, capacity, and career stage. We will actively focus on human factors, team wellbeing, and workload, enabling early recognition of signs of overload.

We will make deliberate use of technology to automate routine tasks and create more time for activities that deliver the greatest value for patients and healthcare. By consciously focusing on what truly matters, we will maintain a healthy work-life balance and ensure that medical physics remains an attractive field.
Our strength is reinforced by unity and a clearly defined professional identity, which we actively promote. In this way, patients, healthcare professionals, and policymakers will recognise us as trusted experts in the safe and appropriate use of medical technology.

2035

OUR DIRECTION FOR FUTURE-PROOF MEDICAL TECHNOLOGY

Guided by our three core principles, we shape our direction for future-proof medical technology. This direction is built around four interconnected focus areas:

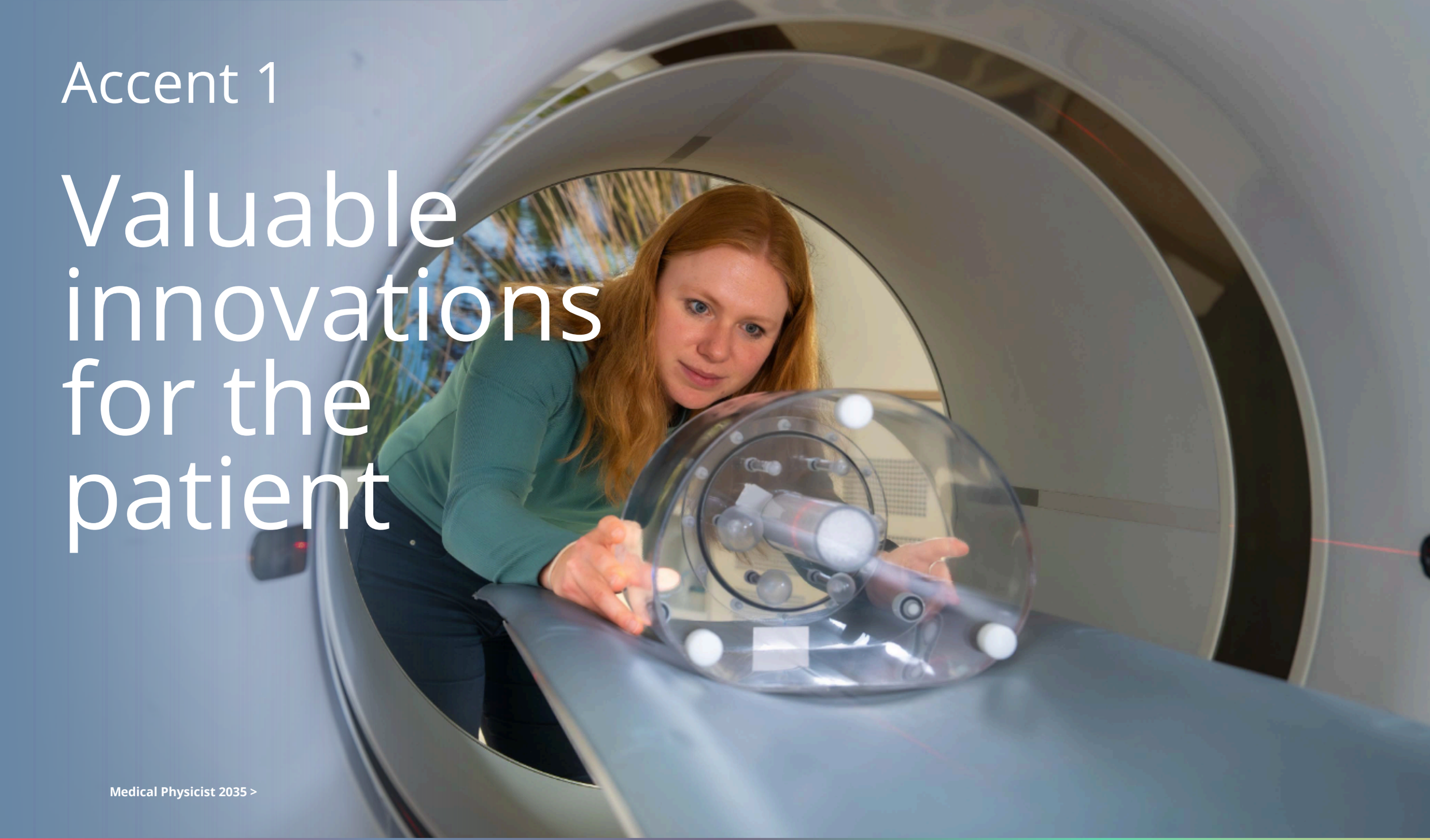
- Valuable innovations for the patient;
- Knowledge and skills for the future;
- Technological resilience;
- Sustainable medical technology for sustainable healthcare.

OUR CENTRAL AMBITION FOR 2035

By 2035, we will ensure that medical technology is developed and applied purposefully, responsibly and sustainably, delivering demonstrable value to patients, healthcare professionals and healthcare delivery.
We connect innovation to real-world needs. We evaluate value, accelerate what works, discontinue what no longer adds value, promote knowledge, understanding and acceptance, and safeguard availability, including in times of scarcity and crisis.
Through leadership, a broad perspective, adaptability and strong collaborative skills, we strengthen healthcare both within and beyond the hospital.

Accent 1

Valuable innovations for the patient



By 2035, we will work in a risk-based and value-driven way. We will implement innovations that create value for patients, healthcare professionals and society, and discontinue medical technologies and activities that no longer add value.

Medical technology offers tremendous opportunities to keep healthcare accessible. The growing scarcity of people and resources means that we must make the most of these opportunities, while also making difficult choices.
The use of medical technology continues to increase, but it does not always result in better, more affordable or more sustainable care. Innovations are regularly implemented that add little value or unintentionally contribute to rising costs, greater complexity and increased workload. At the same time, the discontinuation of technologies and practices that no longer provide meaningful benefit remains limited.
To fully realise the potential of medical technology, we must focus our time and effort on innovations that truly add value.

Ambition
By 2035, new medical technologies, including digital applications and AI, will be introduced and evaluated using a structured, risk-based and value-driven approach.
Working closely with patients, healthcare professionals, healthcare leaders, policymakers and industry partners, we will take the lead at an early stage. Together, we will determine which technologies genuinely add value for which clinical indications.

We will identify and prioritise the most important clinical challenges that can be addressed through medical technological innovation.

New technologies will be assessed on their effectiveness, cost, impact on workload and environmental sustainability. Through early, proportionate and multidisciplinary evaluation, valuable innovations can be implemented more quickly and safely. At the same time, technologies that fail to demonstrate sufficient value can be modified, scaled back or discontinued in a timely manner.

In this way, we guide the innovation, implementation and de-implementation of medical technology, ensuring a demonstrable contribution to appropriate, high-quality, sustainable and future-proof healthcare, both within hospitals and beyond the hospital setting.
Value and proportionality guide not only innovation, but all aspects of our work as medical physicists.

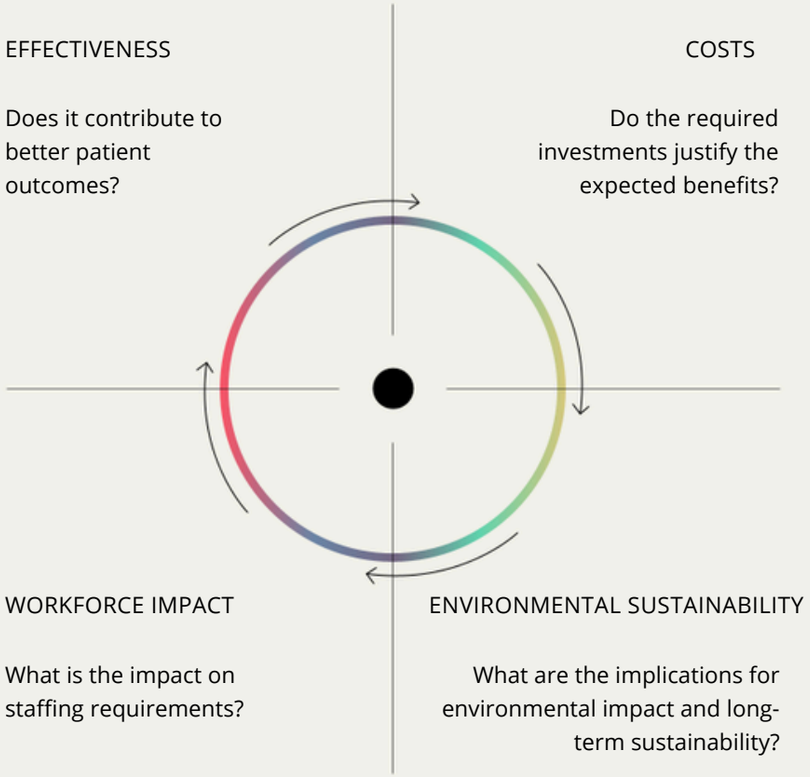
Why?
Medical technological innovations offer significant opportunities and have the potential to improve health outcomes. Yet too often they add care rather than replace existing practices or make care more efficient.

This also applies to enabling technologies such as robotics, home automation, remote monitoring and digital health solutions.
While these innovations have the potential to support future-proof healthcare, the expected gains in efficiency are not always realised. This may be due to limited interoperability, inadequate data quality, misaligned financial incentives or insufficient support among users and stakeholders.
At a time of growing healthcare demand and workforce shortages, further increases in complexity, along with the associated costs and resource requirements, are no longer sustainable.

In addition, the growing use of prevention strategies and wearable technologies brings not only benefits but also risks, including diagnostic expansion. This may result in unnecessary and costly follow-up diagnostics and place additional pressure on the healthcare system.
These developments call for a shift towards value-driven and risk-based innovation.

4 Kaplan, D.M., Greenleaf, M. & Lam, W.A., Wear With Care: A Call for Empirical Investigations of Adverse Outcomes of Consumer Health Wearables, Mayo Clinic Proceedings: Digital Health, Vol. 1, No. 3, 2023, pp. 413-418. Available online

VALUE ASSESSMENT
Does the (new) medical technology demonstrably create value?



What do we want to have achieved by 2035?

Value assessment as an integral part of daily practice
Our traditional focus on quality and safety remains essential, but it is no longer sufficient. By 2035, we will assess medical technology not only in terms of quality and risk, but also in terms of the value it creates for patients, healthcare professionals and society. This applies to both new and existing technologies and applications.
We will evaluate these technologies systematically and at regular intervals to determine whether they continue to deliver sufficient value relative to their costs, workforce implications and associated risks.

This shift requires well-founded decisions about which uncertainties and risks are acceptable and how they can be incorporated into a balanced assessment framework. As a result, value, risk and proportionality become guiding principles throughout the entire lifecycle of medical technology, from innovation and implementation to quality management, evaluation and de-implementation.
Innovation and evaluation will be inseparable by 2035. Every innovation will be linked to clear evaluation questions, predefined decision points, and opportunities to adjust, scale up or scale down where appropriate.

Evaluations will be conducted in close collaboration with Health Technology Assessment (HTA) experts and relevant stakeholders, including fellow healthcare professionals, patients, healthcare leaders, health insurers and industry partners. This will provide early insight into effectiveness, costs, environmental sustainability, workforce impact and practical feasibility.

Early evaluation does not hinder innovation. On the contrary, it encourages developers to consider from the outset whether further development will genuinely contribute to high-value healthcare.

Regional and national collaboration will strengthen this approach. By pooling evaluations and strategically distributing or concentrating innovations, we will prevent fragmentation and increase the likelihood that valuable technologies are introduced in the right place and for the right purpose.

The NVKF provides direction, support and visibility

By 2035, the NVKF plays an active and connecting role in value-driven innovation, risk-based practice and the appropriate use of medical technology. We support individual medical physicists by bringing together expertise and developing frameworks that enable well-founded, people-centred decision-making throughout the technology lifecycle.

In addition, the NVKF actively contributes the collective knowledge of the profession to national policymaking and societal discussions on quality, accessibility, affordability and sustainability. As a result, we are recognised as an accessible and trusted source of expertise for organisations such as the Ministry of Health, Welfare and Sport, the National Health Care Institute, health insurers and regulatory authorities.

We do this in close collaboration with adjacent clinical and technological disciplines.

The NVKF also promotes the development of evaluation expertise within the profession. By 2035, medical physicists will have access to knowledge and skills in health economics, healthcare evaluation and data quality. We facilitate collaboration with Health Technology Assessment (HTA) experts and other relevant disciplines, while engaging policymakers and funders in creating the conditions needed for value-driven and proportionate evaluation.

Finally, we ensure an effective division of roles. Not every medical physicist needs to possess all areas of expertise. As a profession, we collectively cover the full innovation and evaluation cycle through specialisation, collaboration and active knowledge sharing.

Innovation and value assessment are embedded in the NVKF knowledge and quality cycle

By 2035, innovation, value assessment, and value-driven, risk-based quality policy are fully integrated into the NVKF knowledge and quality cycle. Evaluation and appropriate use are not end points, but rather part of a continuous cycle of development, implementation, reassessment and, where appropriate, de-implementation.

The research agenda focuses both on emerging technological developments and on the periodic reassessment of existing applications. This is carried out in close alignment with clinical practice, policy and research.

The knowledge platforms play a central and connecting role in this process. They identify relevant developments, translate new insights into practice and actively share knowledge on value assessment, risk-based practice and innovation.

This continuous interaction between practice, research and policy creates a learning system in which valuable technologies can be scaled up more rapidly, while technologies that no longer add value can be phased out in a timely manner.

The NVKF strengthens this infrastructure by facilitating collaboration with scientific and methodological partners and by promoting the quality of evaluations.
A Chair in Medical Technology Evaluation could provide a valuable opportunity to further strengthen the scientific foundation of the field.
In this way, we are building a future-proof foundation that enables the profession to systematically and transparently guide the value-driven use of medical technology.

What will we do?

Medical physicists, departments and teams

Making deliberate choices and knowing when to stop
We will implement innovations with demonstrable added value and de-implement technologies that no longer contribute to high-quality care. Within the medical staff, we will take responsibility for coherent decision-making regarding innovation and advise hospital boards on priorities and value criteria for the use of medical technology.

We will normalise the conversation around discontinuing or adapting technologies and practices when they no longer provide sufficient value.

Effective use of medical technology throughout its lifecycle
Drawing on our expertise, we will actively contribute to risk-based quality management for medical technology, as described in the Guidance on Medical Technology. We will apply technology proportionately and based on risk, not only during innovation and implementation, but also during the management and periodic reassessment of existing technologies.

Early and proportionate evaluation
We will ensure that innovations are evaluated in a structured and risk-based manner, using clear evaluation questions and predefined decision points before technologies are implemented on a large scale.

Collaborating on evaluation
We will collaborate on evaluations within our own areas of expertise and across the organisation. We will work in multidisciplinary teams and regional networks to pool knowledge and prevent fragmentation.

NVKF

Promoting and facilitating knowledge sharing
We will encourage hospitals to actively exchange knowledge and experience regarding the evaluation of medical technological innovations, including best practices for value-driven and risk-based implementation.

Embedding evaluation in healthcare practice
We will advocate for the expansion of national healthcare evaluation frameworks to ensure that evaluations of medical technologies become a visible and structural component of these programmes.

Providing direction through strategic agendas
Alongside the research agenda, we will develop both an innovation agenda and a de-implementation agenda to support prioritisation, ownership and collective decision-making regarding valuable technologies.

Strengthening education and expertise
We will expand educational opportunities in Health Technology Assessment (HTA), medical technology evaluation and risk-based practice. We will facilitate collaboration with HTA experts and other disciplines to further strengthen evaluation expertise within the profession.

Leading the conversation on value
We will foster dialogue within the profession and with national stakeholders on the responsible acceptance of risk. We will position the NVKF as a visible source of expertise in societal and policy discussions on the appropriate use of medical technology.

Our call to stakeholders

Policymakers and government

Trust the expertise of healthcare professionals in the safe and risk-based application of medical technology. Create room for proportionate and value-driven evaluation rather than incentives focused primarily on volume.

Hospitals and healthcare organizations

Establish multidisciplinary decision-making processes for innovation. Ensure coherence and take responsibility for quality management related to medical technology.
Medical technology is an integral part of every care pathway, so involve the relevant experts early and on a structural basis.

Industry and technology developers

Involve patients, medical physicists and other healthcare professionals at an early stage of innovation to ensure that technologies align with clinical needs, usability and value.

Accent 2

Knowledge & skills for the future

By 2035, we will be broadly deployable and professionally agile, supported by a strong shared foundation of knowledge and skills, and by the continuous development of both our field and ourselves in response to societal and technological change.

Healthcare is changing rapidly and becoming increasingly technology-intensive. As medical physicists, we operate at the interface of technology, healthcare and innovation. We therefore play a key role in assessing, implementing and sustaining new technologies in clinical practice.
The appropriate use of medical technology also requires the appropriate deployment of our expertise. This demands flexibility in how that expertise is developed, whether through the knowledge and quality cycle, specialist training, or continuing professional development throughout an entire career.

Building on our foundation in both physics and clinical practice, we continuously expand and adapt our knowledge, applications and skills. In doing so, we ensure that our expertise can always be applied where it creates the greatest value for patients, healthcare professionals and society.
Together, we will define a framework for the knowledge and skills our profession will require in 2035. This framework will guide the further development of continuing education, research and our research agenda.

Ambition

We strive to be a profession that is professionally agile, future-oriented and broadly deployable, without losing sight of the core of our field.
By 2035, the medical physicist will have:

- A strong shared foundation of knowledge and competencies;
- Specialist expertise in one or more domains;
- Continuous opportunities to deepen or broaden their expertise in response to the needs of patients, society and their own professional development;
- The skills required to guide technological and strategic decision-making within the multidisciplinary and interprofessional environments in which we work.

By 2035 at the latest, the NVKF will actively promote and facilitate the continuous and flexible development of new knowledge and competencies. In this way, essential expertise will be developed and medical physicists will continue to grow throughout their careers in ways that match both their role and the needs of the healthcare sector.
The association and the field will be organised with sufficient flexibility to allow rapid adaptation to changing themes and areas of expertise.

Why?

New technologies offer significant opportunities to keep healthcare sustainable, accessible and affordable. Digitalisation, data-driven healthcare, and challenges relating to sustainability and crisis preparedness require professionals who not only possess a strong understanding of relevant technologies, but also have insight into healthcare processes and decision-making.
This enables them to assess the risks, impact and value of technology and translate these into safe and effective clinical practice.

It is difficult to predict exactly which new technologies will emerge over the coming years. We expect artificial intelligence to fulfil its promise, sensor technology to accelerate care beyond the hospital setting and preventive care, and robotics to save time and improve efficiency. However, much remains uncertain.
What we do know is that healthcare will continue to evolve and that many new developments will emerge. To realise the opportunities presented by these technologies, we must be able to build knowledge rapidly, identify opportunities and risks, and assess technology critically and effectively.

This requires more than expertise in both traditional and emerging knowledge domains. As medical physicists, we must also be able to demonstrate leadership, solve new problems creatively and analytically, and make informed decisions in an increasingly complex technological environment.
By investing in flexible knowledge development and professional growth, we can ensure that our profession remains responsive to future developments in healthcare.

What will we have achieved by 2035?

A strong substantive organisation of the field, supported by the profession

By 2035, the field and the association will be well organised around a fully functioning knowledge and quality cycle. The NVKF will support medical physicists in rapidly and effectively incorporating new technologies into the field.

The NVKF knowledge platforms will play a strategic and connecting role. They will identify emerging technologies and research gaps, and act as catalysts for practice-oriented research, methodological innovation and the sharing of evidence-based insights.

This will translate into identifying research priorities, stimulating scientific research, developing guidelines, providing centralised continuing education, and advising on updates to the specialist training curriculum.

Structured knowledge development through scientific research

By 2035, the knowledge platforms, together with the Science & Innovation Committee and the Professors' Advisory Council, will make a major contribution to strengthening the scientific foundation of our field.

By structurally connecting scientific expertise with technological innovation and clinical application, new research questions will be identified at an early stage, research findings will be translated more rapidly into professional practice, and science and innovation will reinforce one another.

A strong shared foundation with opportunities for continuous development

By 2035, every medical physicist will possess a clearly recognisable and widely supported foundation of knowledge and skills. This foundation will be current, future-proof and provide the basis for further specialisation and professional development.

As a result, the field will remain agile and capable of adapting to technological and societal developments.
A central continuing education programme, informed by the knowledge platforms, will provide direction for collective professional development and offer medical physicists ongoing opportunities to broaden or deepen their expertise.

This may include knowledge of emerging technologies or other competencies that are needed at a particular point in time. The programme will provide structure, relevance and coherence, and will align with the themes and priorities described in this vision document.

The combination of a strong central programme and active knowledge platforms will provide the profession with a robust infrastructure for continuous development.

A registration renewal system that supports flexibility and professional excellence

By 2035, the registration renewal system will align with the vision of a lifelong, flexible and development-oriented professional practice.

It will reflect the fact that knowledge and skills continuously evolve and that medical physicists may deepen, broaden or even change their role throughout their careers.

The system will retain room for individual flexibility while remaining aligned with the needs of the healthcare sector. In this way, professional competence in relevant areas can be demonstrated, while ensuring that the profession retains the flexibility needed for future development.

A future-proof training landscape that can adapt to emerging competencies

As we move towards 2035, the NVKF will increasingly clarify which knowledge and skills are essential for the medical physicists of the future. This will enable the Foundation for the Education of Medical Physicists (OKF) to incorporate these needs into the development of the training programme.
Ideally, the curriculum will remain current, future-proof and flexible, enabling new and emerging knowledge areas and competencies to be incorporated quickly and appropriately whenever societal or technological developments require it.

It may also be appropriate to pursue greater flexibility regarding equivalent educational backgrounds, given the diversity of academic pathways within the broader medical technology domain. This diversity can enrich the field and strengthen both its innovative capacity and societal relevance.

A safe and valuable application of AI
By 2035, AI will be an integral part of diagnosis, treatment and clinical decision-making. The safe and valuable use of this technology requires a thorough understanding of how AI systems work, as well as their risks and limitations. Medical physicists play a central role in this area.

Building on our foundation in physics and our technological expertise, we are well positioned to assess the reliability, clinical relevance and impact of AI applications and to translate these into responsible use in healthcare. In doing so, we work alongside fellow medical specialists and other healthcare professionals who use AI in clinical practice.

This will require new assessment frameworks and professional standards, developed and maintained jointly by medical physicists and other relevant specialists.
AI also strengthens the role of the medical physicist as a connector between disciplines. In the healthcare system of 2035, medical physicists will work closely with data scientists, ICT professionals, legal experts and ethicists to ensure that technology is applied safely, effectively and in a socially responsible manner.

In this way, medical physicists will make a structural contribution to technology-enabled healthcare that is sustainable, reliable and future-oriented.

A future-proof profession shaping technology-enabled healthcare
Evaluative and analytical thinking will be an integral part of professional practice. Medical physicists will assess not only whether something is technically feasible, but also what it contributes to patient safety, quality, accessibility, sustainability and affordability.

To apply this expertise effectively and genuinely shape the future of healthcare, leadership is essential.
In this way, our profession will play a central role in the technological choices that define the future of healthcare.

What will we do?

Medical physicists, departments and teams

Continuing to develop both breadth and depth
We will combine a strong foundation of expertise with further specialisation or broadening in relevant domains, aligned with both individual ambitions and organisational needs.

Acting with strong professional and analytical expertise
We will place technology in its broader context, solve new challenges creatively, and make well-founded decisions in an increasingly complex technological environment.

Providing direction and sharing knowledge
Working within multidisciplinary teams, we will help shape technological and strategic decision-making and actively contribute to the education and development of our colleagues.

Building expertise in AI
We will ensure that every medical physicist is able to understand and assess AI applications in terms of safety, reliability and clinical value.

NVKF

Providing direction for professional development
We will identify the knowledge and skills required towards 2035 and translate these into a research agenda and a professional, future-proof educational programme, in close collaboration with the OKF Foundation.

Creating a flexible organisation and registration renewal system
We will organise the association in a way that enables it to adapt to emerging themes and developments. We will also introduce a registration renewal system that supports flexibility and lifelong professional development, while reflecting a contemporary and societally relevant profile of the medical physicist.

Strengthening the knowledge infrastructure
We will leverage the knowledge platforms as key drivers of professional development, centralised education, scientific research and innovation.

Embedding AI as a core professional competence
We will develop and maintain frameworks, education and knowledge-sharing activities that establish AI as an integral component of future professional practice.

Our call to stakeholders

OKF Foundation

When updating the training curriculum, take the Medical Physicist 2035 vision into account to ensure that training remains future-proof and flexible.

Align the curriculum with both current and emerging roles of the medical physicist, with particular emphasis on the development of professional behaviour and competence.

Accent 3

Technological resilience

Medical Physicist 2035 >

By 2035, healthcare will be technologically resilient, ensuring that essential medical technology remains available and reliable for as long as possible during prolonged disruptions.

The geopolitical landscape and climate change are making the safe, reliable and appropriate use of medical technology increasingly complex. Disruptions caused by cyberattacks, infrastructure failures and interruptions in international supply chains are becoming more likely. At the same time, healthcare is becoming increasingly vulnerable due to its growing dependence on technology.

Technological resilience and crisis preparedness have therefore become essential. They concern the ability to maintain the reliable availability of medical technology and, where necessary, provide appropriate alternatives. Even under unpredictable, uncertain or disruptive circumstances, healthcare must be able to continue functioning.

As medical physicists, we contribute to this by using our expertise to identify technological risks and their potential clinical consequences, explore alternative solutions, and help develop contingency plans.

Ambition

We will strengthen resilience by increasing insight into technological dependencies. By 2035, or earlier if necessary, we will have developed clear frameworks for operating under pressure, responding to shortages or system failures, and restoring technology following disruptions.

This requires collaboration both within and between hospitals. Regional cooperation through ROAZ structures and national coordination with organisations such as the Federation of Medical Specialists, fellow scientific societies, the Ministry of Health, Welfare and Sport, the Ministry of Defence, and the National Coordinator for Counterterrorism and Security (NCTV) will be essential.

Why?

The vulnerability of healthcare is increasing as a result of its dependence on complex technological ecosystems. Failures in energy supply, data infrastructure or digital systems have an immediate impact on patient safety and continuity of care. The Dutch government expects healthcare organisations to be able to operate independently for at least 72 hours during the acute phase of a disruption. This 72-hour standard is aligned with national resilience guidelines based on international principles of crisis preparedness.

What will we have achieved by 2035?

By 2035 at the latest, technological resilience and crisis preparedness will be a natural part of how healthcare is organised and firmly embedded in our field.

We will have:

> **Safe and resilient healthcare technology**
Critical equipment, digital systems and infrastructure will, wherever possible, be supported by proven emergency provisions, or replaced by less dependent alternatives, enabling them to function autonomously for at least 72 hours during disruptions.

We will be actively involved in developing and implementing:

> **Realistic exercises and insight into dependencies**
Vulnerabilities will be reduced, and hospitals will be prepared for prolonged disruptions to energy supply, ICT systems and supply chain logistics.

- **Fallback strategies and frameworks for ethically responsible decision-making**
  In situations where the highest attainable level of quality and accessibility can no longer be maintained, we must be prepared to accept different risks than would normally be considered acceptable.

Together with other healthcare professionals, we will work towards:

- **Maintaining future-proof knowledge and skills**
  Keeping our expertise in technological resilience current and relevant.
- **A healthcare and safety ecosystem built on shared responsibility**
  Across the healthcare and safety ecosystem, we will work together to ensure technological continuity and to develop scenarios and ethical frameworks that support decision-making during disruptions.

What will we do?

Medical physicists, departments and teams

Preparing for disruptions to medical technology
We will proactively identify risks and vulnerabilities related to medical technology and translate these into practical contingency procedures and effective backup systems. This includes developing scenarios and conducting exercises to test preparedness and resilience.

Designing and implementing alternative technologies
We will actively contribute to the design and implementation of alternative technologies and working methods that are less dependent on vulnerable supply chains and infrastructure. In this way, healthcare can continue to be delivered safely, even under extreme circumstances.

NVKF

Professional frameworks for crisis preparedness and continuity of care
We will develop professional frameworks and practical tools, such as action cards, to support the role of medical physicists during crises and in situations where the availability of medical technology is limited.

Education and expertise development
We will identify the areas of expertise that are relevant to medical physicists in the context of technological resilience. These may include ICT, cybersecurity, infrastructure and emergency preparedness. We will provide targeted education and training in these areas.

National coordination
We will ensure national alignment with stakeholders and partners involved in healthcare continuity and security.

Preparing for disruptions to communication systems
We will develop a plan to ensure that the NVKF can continue to function effectively in the event of disruptions to communication systems.

Our call to stakeholders

OKF Foundation

Incorporate relevant areas of expertise related to technological resilience into the training curriculum.

Healthcare organisations, the Ministry of Health, Welfare and Sport, the Health and Youth Care Inspectorate, and Zorg Inkoop Netwerk Nederland

- Ensure that technological expertise is functionally embedded within continuity plans, enabling timely and informed decision-making during disruptions.
- Systematically identify critical technologies, dependencies and minimum operational requirements, including appropriate contingency measures and backup systems.
- Organise realistic exercises that periodically simulate actual technological failures and transitions to fallback procedures. These exercises should demonstrate how the organisation can continue to operate independently for at least 72 hours.
- Strengthen regional collaboration, including through ROAZ agreements and partner hospitals, to safeguard technological continuity across the healthcare system.

Accent 4

Sustainable medical technology for sustainable healthcare

By 2035, we will make healthcare more sustainable through the deliberate and future-oriented use of medical technology. In doing so, we will systematically consider quality, safety, efficiency and sustainability through an integrated, risk-based approach.

The healthcare sector contributes to health and wellbeing, but it also has a significant impact on the environment and climate. Over the long term, this impact affects both population health and the sustainability of the healthcare system itself.
Medical technology can contribute to more efficient and accessible healthcare, but it also entails energy consumption, material use and supply chain dependencies. This requires informed and integrated decision-making.
Medical physicists contribute to these decisions by assessing quality and efficiency alongside sustainability, and by translating these considerations into clinical practice.

Ambition

By 2035, sustainability will be an integral part of decision-making related to the use of medical technology.
Environmental impact will be systematically considered alongside quality, safety and efficiency in the development, selection, use and replacement of medical technology.
Medical physicists will help guide these decisions by contributing to risk-based, proportionate and evidence-informed decision-making. We will distinguish evidence from assumptions and focus on measures that deliver meaningful impact.
In this way, we support healthcare that is not only beneficial for individual patients, but also takes into account its effects on the environment and society as a whole.

Why?

Healthcare is under increasing pressure as a result of population ageing, workforce shortages and rising costs. At the same time, the societal challenge of climate change and resource scarcity requires a reduction in the environmental footprint of healthcare.

Medical technology is a key factor in this challenge. New technologies can contribute to labour savings and improved care, but they do not automatically reduce environmental impact or the use of scarce resources.

Sustainable choices therefore require explicit, risk-based consideration of multiple interests and trade-offs.
Medical physicists have the expertise to provide insight into these trade-offs and support decision-making, ensuring that choices are evidence-based, transparent and well justified.

What will we have achieved by 2035?

By 2035, sustainability will be integrated throughout the entire lifecycle of medical technology. This will be reflected in four interconnected developments.

Integrated decision-making

Sustainability will be a routine part of decision-making related to medical technology. We will make choices based on a balanced assessment of quality, safety, cost and environmental impact.
There will be room for risk-based decision-making. Where justified, we will be able to deviate from standard practices and regulations when doing so demonstrably leads to a better balance between the interests of the patient and the impact on society and the environment.

Efficient use of technology

Medical technology will be used more efficiently, with greater attention to utilisation, service life and appropriate use. This will lead to better use of existing capacity and help prevent unnecessary expansion of resources.

As a result, the environmental impact of healthcare will be reduced. Energy consumption and operational utilisation will be systematically considered in decisions regarding the management and use of medical technology.

Extending service life and promoting circularity

Where possible, the service life of medical technology will be extended through maintenance, upgrades and reuse.

Collaboration with suppliers will focus on modular systems, reuse rather than single-use solutions, and the reduction of waste streams. Circularity will be embraced where it contributes to quality and efficiency.

Supply chain awareness

When making decisions about the procurement of medical technology, we will take greater account of the wider supply chain, including production, transport and end-of-life processing.

Available information on the environmental impact across the entire value chain will be used to support more informed and transparent decision-making.

Wat gaan we doen?

Klinisch fysici, vakgroepen en afdelingen

Making sustainability-focused decisions together
We will consider environmental impact alongside quality, safety and efficiency when making decisions about the development, use, management and replacement of medical technology. We will work closely with hospital leadership, procurement teams and end users of medical technology to enable integrated decision-making.

Promoting efficient use and extending service life
We will take utilisation, service life, energy consumption and appropriate clinical use into account when managing medical technology. We will encourage maintenance, reuse, scaling and modular upgrades where these support quality and efficiency.

Taking a supply chain perspective
When making decisions about the procurement and management of medical technology, we will consider information relating to production, logistics and end-of-life processes.

Optimising care processes
We will reduce unnecessary patient travel, avoid unnecessary care and promote remote monitoring where appropriate.

NVKF

Developing frameworks and guidance
We will develop professional standards for sustainable medical technology, including AI, based on risk-based assessments of quality, safety, efficiency and environmental impact.

Strengthening knowledge sharing
We will ensure that sustainability becomes a recurring theme within education, the knowledge platforms and the research agenda. We will actively promote and disseminate good practices across the profession.

Embedding sustainability in continuing professional development
We will integrate sustainable medical technology and supply chain awareness into continuing education and professional development activities.

Influencing policy
We will advocate for the inclusion of sustainability criteria in national programmes, guidelines and policy discussions relating to medical technology and healthcare innovation.

Engaging with suppliers and supply chain partners
We will encourage sustainable design, modular systems, life extension, reuse and greater transparency regarding environmental impact in order to drive change across the market.

Our call to stakeholders

Healthcare organisations and hospital leaders

Enable integrated decision-making
Make sustainability a standard consideration alongside quality, safety and efficiency in decision-making processes.

Facilitate multidisciplinary decision-making around medical technology
Ensure that decisions are well-founded and support the efficient, sustainable and responsible use of medical technology.

Policymakers and funders

Create conditions that support sustainable choices
Provide appropriate regulatory frameworks, funding mechanisms and procurement criteria that enable sustainable decision-making.

Improve the availability and comparability of environmental impact data
Ensure that supply chain impacts are transparent and comparable, allowing them to be meaningfully incorporated into decision-making.

Industry and suppliers

Develop sustainable and transparent technologies
Consider energy consumption, product lifespan, reusability and the full environmental impact across the lifecycle of medical technology, including manufacturing, materials, logistics and end-of-life management.

Work together with healthcare professionals to develop solutions that are practical, scalable and sustainable.

OKF Foundation

Embed sustainability into education and training
Integrate sustainable medical technology, supply chain awareness and integrated decision-making into the training curriculum.

Contact
Dutch Assiociation for Medical Physics (NVKF): Nederlandse Vereniging voor Klinische Fysica
P.O. Box 8503
3503 RM Utrecht
E-mail: secretariaat@nvkf.nl
Tel.: 030 68 68 760
Linkedin.com/nvkf

Visit address
Domus Medica
Mercatorlaan 1200
3528 BL Utrecht

Colophon
Editor-in-chief: Lyanneke Krauss
Photographer: Merlijn Janssen Steenberg | Magic Lantern
Design and layout: Studio Douwe Hoendervanger | BNO
Translation:

WRITING GROUP • NICOLE BAKKER • RICHARD CANTERS • CRIS LANTING • TEUN MINKELS • AART NEDERVEEN • MARLOES DE WINTER • RUUD VAN LEEUWEN • ILJA DEURLOO • KEES BERGSMA • LEONIE PAULIS • MARGO VAN GENT ADVISORY GROUP • WALTER BACKES • RONALD BOELLAARD • STEVEN PETIT • JANITA VAN TIMMEREN • MARCIA EMMER • WENDY VAN HEST-MAHN • ARNOLD SCHILHAM • FRANK DE LANGE • MARTIJN FRANKEN • MARLOES DAMEN • VERA LAGERBURG • JEREMY SCHIPHOF-GODART • ANGÉLIQUE ROG

ROADSHOW ORGANISERS • FRANK DE LANGE • MAARTEN DIRKX • BAS VIOL • MARK HOFMAN • JORN VAN DALEN • MARCEL GREUTER • PAUL VAN HAAREN • NIELS RAAIJMAKERS

OFFICE • LEYLA BANCHAEWA • TEUS VAN BARNEVELD • ISABEL WITTERMANS • EMMA SOMBROEK • FIEKE PEPPING

BOARD • MARIKEN ZIJLMANS • MARJOLEIN HILGERINK • JACCO STEENHUIJSEN • ELLEN BRUNENBERG • LOES SAUREN • ERWIN BAAS • GILLES BONNÉ • JOHAN CUIJPERS • ANNET WIERTS-AARTS • ERWIN GEORGE

AND EVERYONE WHO CONTRIBUTED TO THE DEVELOPMENT OF THIS VISION

Medical Physicist 2035 >

NVKF.nl