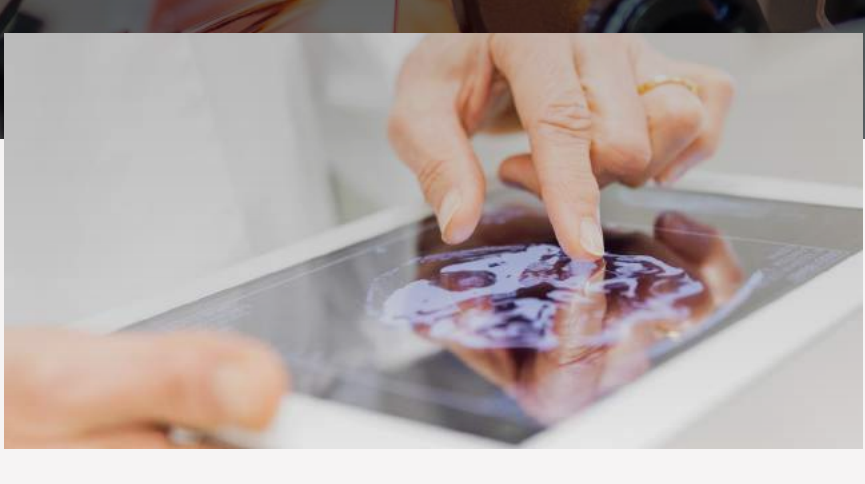
Transforming healthcare with AI

Impact on the workforce and organisations



The joint report between EIT Health and McKinsey & Company helps to define the impact of artificial intelligence (AI) on healthcare practitioners (HCPs). It outlines the implications of introducing and scaling AI for healthcare organisations and healthcare systems, with a particular focus on Europe and EU member states.

The report explores the perspective of public and private sector decision makers and thought leaders in Europe and EU member states, alongside HCPs, health investors and AI start-up founders and other executives.*

*62 interviews of public and private sector decision makers and thought-leaders across Europe, North America and Asia, were conducted between December 2019 and January 2020. A survey of 175 healthcare professionals, health investors and AI start-up founders and other executives was conducted between December 2019 and January 2020. The research was complemented by macroeconomic analyses of the Future of Work for European healthcare systems from the work of the McKinsey Global Institute (MGI).

Current and future uses of AI in European healthcare

According to HCPs, AI will become increasingly more important for clinical decision making over the next decade.

Current applications of AI in healthcare organisations today

HCP responses

21.5%	Diagnostics (imaging, pathology, sequencing)
18.1%	Clinical decision making
15.3%	Data management
8.3%	Education
6.3%	Prescribing

A prediction of the most important applications for AI in the next 5 - 10 years

HCP responses

#1	Clinical decision making
#2	Diagnostics (imaging, pathology, sequencing)
#3	Self-care / prevention / wellness
#4	Triage and diagnosis
#5	Operational management

Start-ups are focussing their efforts on clinical decision making solutions

This is in line with HCPs' prediction of the most important applications for AI in the next 5 - 10 years.

Which of the following is your solution going to affect?

Start-up executive responses

16.9%	Clinical decision making
14.7%	Self-care / prevention / wellness
12.5%	Triage and diagnosis
11.0%	After care (follow-up and monitoring)
9.6%	Diagnostics (imaging pathology, sequencing)

AI is not expected to replace HCPs, it will instead augment their capabilities to deliver impact for patients and healthcare systems

HCPs can refocus energy on patients, spending less time on administrative tasks and more on direct delivery of care

Activities that currently occupy between 20 to 80% of doctor and nurse time can be streamlined or even eliminated by using AI.

Some activities will be more efficient or deliver better outcomes (or both)

For example, a diagnostic tool could be powered by AI to identify eye disease with the same accuracy as expert clinicians. This could reduce the time to diagnosis allowing providers to treat patients or refer them to the right specialists for further treatment more quickly.

As intelligent machines take over more physical, repetitive and basic cognitive tasks, social and emotional skills will become more essential

These will be vital in helping to coach patients on the use of AI solutions and monitoring their impact. This will be particularly useful for patients with chronic conditions who may be managing their disease with AI-enabled monitoring and decision support.

The average patient coming to hospital may have more complex needs

AI applications will enable more patients with mild to moderate conditions to have home-based care, meaning HCPs can focus their time on patients with more complex needs. Futhermore, HCPs will need to know how best to use AI clinical decision support to navigate the growing quantity of information on treatments. They will need to change their approach to education, seeing lifelong learning, and digital and AI literacy as cornerstones of their practice.

New professionals will need to be welcomed and integrated into healthcare

AI engineers and data scientists will be intrinsic parts of healthcare delivery. There will be an urgent need for healthcare organisations to attract and retain such valuable and in demand talent, by developing flexible and exciting career paths and clear routes to leadership roles.

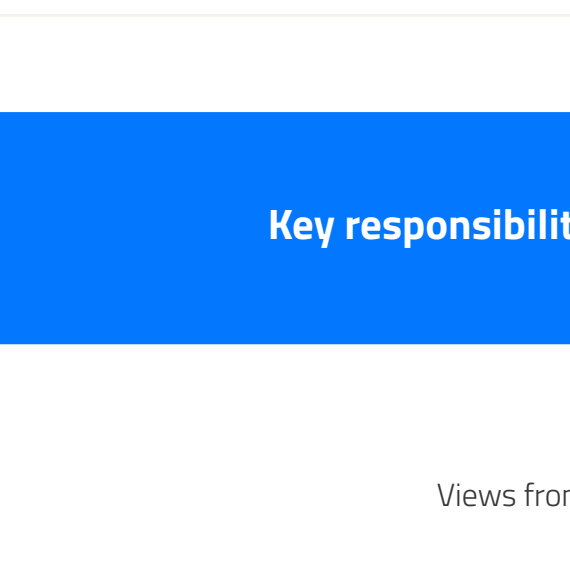
Healthcare decision makers, healthcare providers and HCPs must work together to ensure patients reap the full benefits of AI

44%

of HCPs, who already work in healthcare innovation, have never been involved in the development or deployment of an AI solution in their organisation.

In which part of the development process would you involve healthcare professionals or providers?

Start-up executive responses



Many HCPs stated that existing AI solutions were of poor quality, not truly reflecting their needs.

They identified the main reason for this as a lack of multidisciplinary development between AI and healthcare teams and this is reflected by the start-ups who answered the survey, with only 13.9% involving HCPs in the design phase.

Engaging end users in all stages of development will better support seamless integration into healthcare practices.

Key responsibilities to take in introducing and scaling AI

Key roles

Views from start-up executives, investors and HCPs

Healthcare providers:

Bring together multidisciplinary teams with the right skills and improve the quality and robustness of their data.

Healthcare decision makers:

Increase funding for AI technologies followed closely by simplifying data governance and data sharing between organisations.

The EU:

Increase funding and simplify data governance and sharing.

Data issues dominate the perceived barriers to growing AI in healthcare

Data access, quality and availability were seen as potential roadblocks to delivering AI at scale by start-up executives, investors and HCPs.

What are the major barriers for introducing or scaling AI in healthcare organisations?

Start-up executive, investor and HCP responses

Respondents	Barrier	%
Start-up executives	Lack of interoperability / systems for data sharing	14.1%
	Systems and processes	12.3%
	Lack of funding	12.3%
Investors	Lack of interoperability / systems for data sharing	14.8%
	Data governance / ownership	13.6%
	Systems and processes	12.3%
Healthcare professionals	Lack of skills in data analytics / AI professionals	12.5%
	Lack of funding	12.1%
	Data quality and consistency	12.1%
	Lack of skills in clinical professionals	11.9%

While data issues present a challenge for the scaling of AI in healthcare, there are several potential solutions to overcome these barriers, including:

- Digitising health and collecting the right data
- Ensuring strong data governance and interoperability
- Building bigger data sets
- Incorporating new professional roles
- Clarifying regulations to better manage risk

What needs to change to encourage the introduction and scaling of AI in healthcare?

#1 Work together to deliver quality AI in healthcare

A lack of multidisciplinary development and early involvement of HCPs, and limited iteration by joint AI and healthcare teams, were cited as major barriers to addressing quality issues early and adopting solutions at scale.

#2 Rethink education and skills

Leaders will need to be well-versed in both biomedical and data science. Skills such as basic digital literacy, basic genomics, AI and machine learning must become mainstream for all HCPs, supplemented by critical thinking skills and development of a continuous-learning mindset.

#3 Strengthen data quality, governance, security and interoperability

Data access, quality and availability were potential roadblocks cited by all. In addition, as more healthcare is delivered using new digital technologies, public concerns about how healthcare data are used have increased.

Healthcare organisations should have robust and compliant data-sharing policies that support the improvements in care that AI offers while providing the right safeguards in a cost-efficient way.

#4 Manage change

Clinical leadership is key, as is being open to identifying the right use cases that support rather than antagonise HCPs and truly augment rather than substitute their ability to deliver the best possible care to their patients.

This could include prioritising solutions that focus on reducing the time people spend on routine administrative tasks, rather than those that seek to act as virtual assistants who interact directly with patients.

#5 Invest in new talent and creating new roles

Develop and recruit the new roles that will be critical to the successful introduction and adoption of AI, such as data scientists or data engineers.

Demand for such skills is heating up across industries and the competition for talent will be fierce.

Developing flexible, agile models to attract and retain such talent should be an essential part of people strategies.

#6 Work at scale

Not every hospital will be able to afford to attract new AI talent, or have access to enough data to make algorithms meaningful.

Smaller organisations can benefit from working in innovation clusters that bring together AI, digital health, biomedical research, translational research or other relevant fields.

Larger organisations can develop into centres of excellence that pave the way for regional and public-private collaborations to scale AI in European healthcare.

#7 Regulation, policy making and liability, and managing risk

There is a need to clarify whether AI will be regulated as a product or as a tool that supports decision making, and for a consistent regulatory approach similar to that provided by the European Medicines Agency (EMA) on medicines or by national authorities on medical devices.

#8 Funding

Clear criteria for the potential reimbursement of AI applications will be crucial for its adoption at scale, alongside creative funding models that ensure the benefits are shared across organisations.

EIT Health and McKinsey & Company, (2020), Transforming healthcare with AI. Impact on the workforce and organisations. Survey of 175 healthcare professionals, health investors and AI start-up founders and executives.