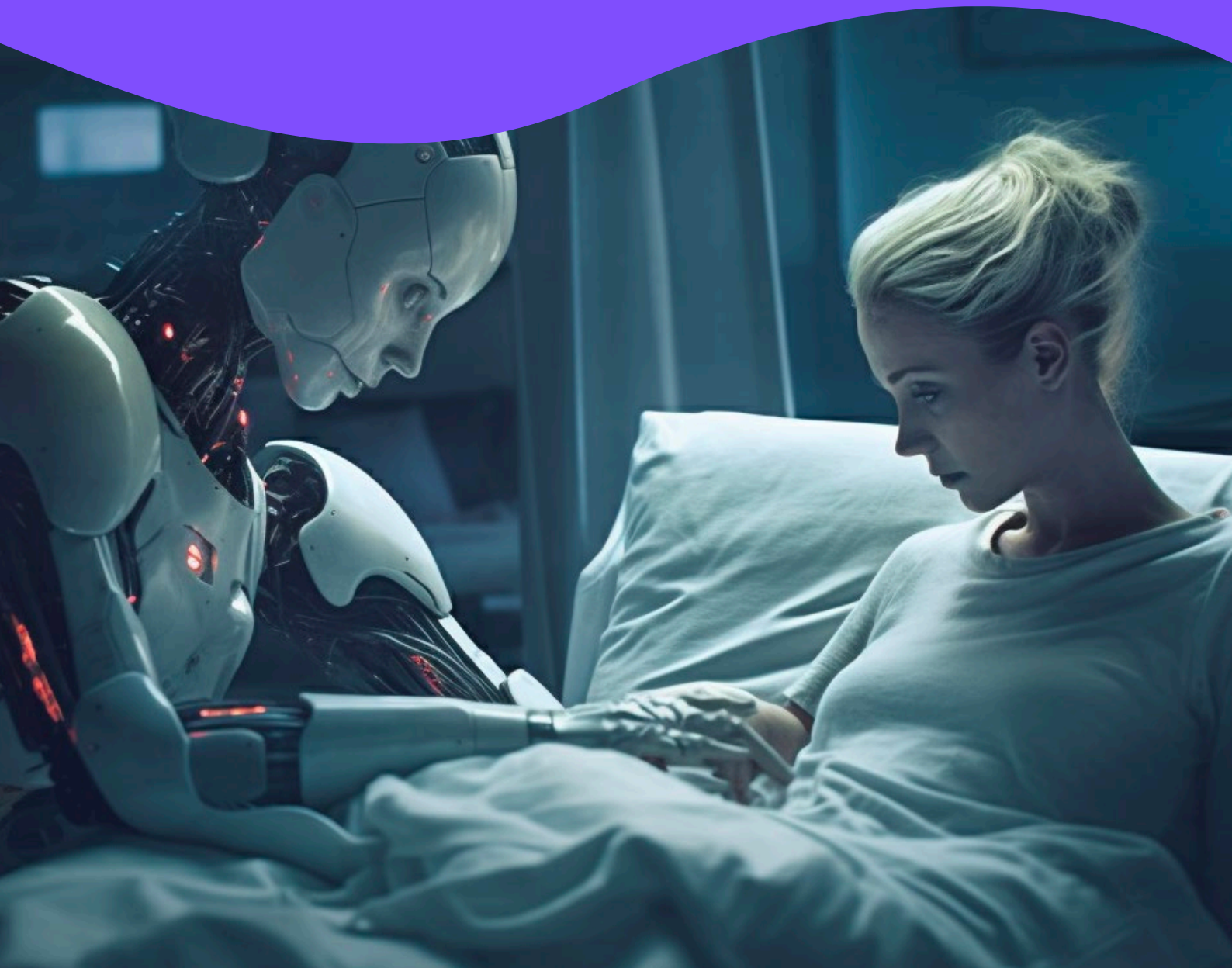


# The **Future** of Healthcare Report

The NHS 75 years on



# Foreword

By Dr. Charles Armitage

From drone-delivered medicine to doctors becoming extinct... these might seem like far off concepts, but they could be closer than you think.

To celebrate the 75th anniversary of our National Health Service, Florence has joined forces with renowned futurist Tracey Follows to uncover just how far our beloved NHS will evolve over the next 75 years.

The faster rate of new technological advancements every year mean our society is constantly progressing, and the way the NHS operates will be no exception to this rule. I'm proud to have devoted my professional career to the healthcare service, both in my time as a doctor and during my time as CEO of Florence, one of the fastest growing health-tech apps. I've seen first-hand the ways in which we operate a healthcare service in this country – and as a result, am invested in understanding how this might change in years to come.

At Florence, we're on a mission to solve the global health and social care staffing crisis, and technology plays a central role in our mission to do that. What excites me most is that just 15 years ago, what we do now simply wouldn't have been possible. Of course, healthcare tech evolves quickly. Thanks to insight from Prof. Follows and feedback from over 100 NHS and healthcare workers, we've looked to sidestep some of the guesswork by predicting what the NHS will look like in 5, 10 or even 75 years.

Naturally, we don't know for sure, but with the information we have at our disposal, we have drawn some possible conclusions that would have a profound impact on the NHS. As you will read in this report, technological developments could very well lead to diagnostics being discovered by AI. Almost half of healthcare workers (46%) expect doctors to be extinct by 2098, while the thought of having a new liver delivered via drone might not be something that is out of a sci-fi movie.

Medicine has been evolving for centuries, and will continue to do so. I am so excited to witness the ways – with the right funding and governmental support - our healthcare system will continue to grow and develop thanks to technology.

My thanks to Tracey Follows for her exceptional contribution and dedication to this report, which brings our predictions to life. My thanks also to the NHS workers who took part in our survey to offer their own insights. My thanks also to the NHS workers who took part in our survey to offer their own insights. Thank you for everything you do in making the NHS the best in the world.

# Foreword

By Tracey Follows

*The future of the NHS will be determined by the fusion of three core principles: health and the ageing population, more autonomy in ways of working and the advancement of technology. Once we understand this, we'll start to understand what the NHS will look like in years to come.*

## Health: an ageing population

The UK population is ageing. The latest ONS census data shows that in 20 years to 2041, the 1960s baby boomers will have moved into older age and by 2066 there will be a further 8.6 million projected UK residents aged 65 years and over, taking the total number in this group to 20.4 million and making up 26% of the total population. The fastest increase is in the 85yr+ group. By 2066 there will be 5.1 million people aged 85 years making up 7% of the total UK population. In contrast, the population aged 16 to 64 years is projected to increase by only 2% over the next 25 years and by 5% by 2066.

An ageing population will also have a significant impact on the healthcare workforce, with more people retiring from the sector at the same time as an ageing population is in most need of care. This will clearly further exacerbate the staffing challenges across the sector.

## Work: more autonomy in ways of working

As part of the trend towards more flexible working, many organisations in the UK see Thursday as the new Friday as they move to a four-day work week with a Fri-Sunday weekend.

Increasingly, industry organisations that used to work 9-5 office hours are now working more flexibly - something those on shift work have done for decades. In addition, more autonomy now lies with employees as more and more now work fully remotely or in a hybrid manner, only attending the office two or three days a week. In the healthcare sector already used to working flexibility, employees are increasingly working remotely too: many tasks that were traditionally done in-person or on-site, can now be carried out remotely.

In addition, we can expect to have many more jobs requiring many more types of skills over our working lives. This is the case whether one works in the private or public sector. It is often estimated that Gen Z will have 17 jobs across 5 different careers in their lifetimes - the 'job for life' is no longer with one company/organisation or in one narrow field, the 'job for life' is looking after your own employment prospects and continually learning, training, and upskilling. We might call this Life-Long Learning.

The World Economic Forum estimates that 40 million skilled workers are needed worldwide to solve the global talent shortage, and 3 million new tech roles will be needed by 2025 in the UK alone. Generation Z (born between 1997 and 2012) and the generation that follows, Generation A (many of whom are yet to be born) will be able to work from anywhere in the world, thanks to remote working in a digitally immersive economy.

## Technology: data goes from siloed to shared

Wearables are now very popular, with people used to monitoring their own health on a daily basis. Smart appointments with instant messaging to reduce waiting room time and car park attendance, and provide in-app navigation to appointments, will soon come online. All of this is giving patients the tools to become a little more reliant on interactive technology rather than having to depend on another human being.

In addition, every industry will undergo digital transformation so that the infrastructure of institutions becomes more connected and interconnected; thereby networking employers, employees, users, consumers, patients and providers together in a vast information system where information is no longer siloed but shared with all.



## Predictions from

Dr. Charles Armitage is co-founder and CEO of Florence, an app connecting health and social care professionals with shifts. He founded Florence in 2016 after experiencing the care staffing crisis first hand while working locum as a surgeon in NHS hospitals across south London. The lack of choices over where and when he could work, and the difficulty of going into new workplaces, were problems he wanted to solve with a new, tech-based solution.

Healthcare organisations use Florence for a faster, more affordable way to fill rota gaps with people they can trust, from their own team and Florence's pool of care professionals. Today, Florence works with 4000+ healthcare organisations and over 90,000 nurses, carers and support workers across the UK, France and Canada.



**Dr. Charles Armitage:  
CEO of Florence**



**Tracey Follows: Futurist and  
Founder of Futuremade,  
a Futures Consultancy**

Tracey Follows is a futurist appearing in a list of the top 50 female futurists in the world in Forbes. Follows is also the Founder and CEO of Futuremade, a futures consultancy. She works with brands, businesses and organisations to help them spot trends, develop foresight and fully prepare for what comes next. She is the author of *The Future of You: can your identity survive 21st century technology?* and host of *The Future of You* podcast where she invites renowned academics, authors and innovators to discuss and debate the future of identity in a digital world.

Follows is a member of the Association of Professional Futurists, World Futures Studies Federation, and an associate fellow of the World Academy of Art & Science.

Part one:



# 5 Years Time

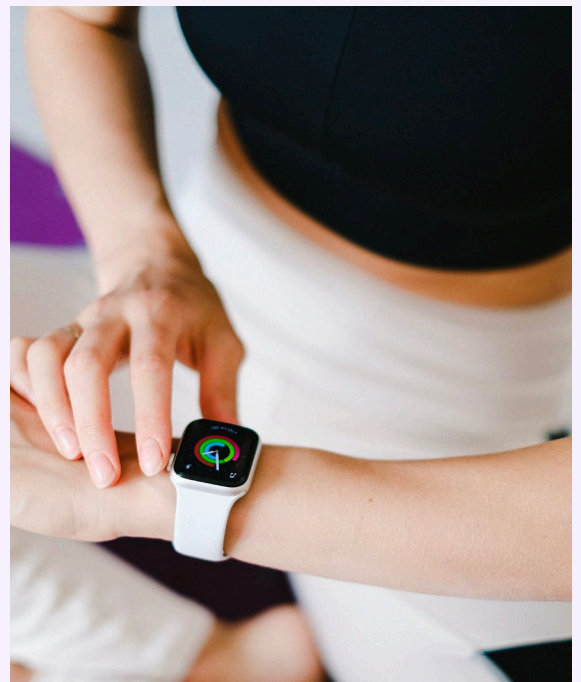


## AI assistants

A nurse cannot do everything by themselves, especially in an expanded role. AI will come to the assistance in many nursing decision-making situations. For example, AI could help monitor patients' vital signs and alert nurses to any changes that might indicate a problem, allowing them to respond quickly. Voice assistant services could be used as prompts to help nurses help patients remember to take their medication, and in future those voices will be the voices of one's own carer or carers rather than a robotic voice.

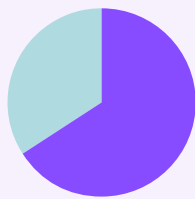
## Data interpretation

Many patients, especially out-patients will be using wearable technology to keep them up to date with their latest nursing observations (vital signs) and to understand when they are within or outside of various parameters. Nurses will not only need to technically understand and be able to fit and set-up those devices on patients, but they will have to care for the patient's mental wellbeing and emotional responses to this situation. Constant monitoring could create additional health anxiety, and it may be the role of the nurse, and it may well be the role of the nurse to help alleviate that, calm patients and help them put daily data on health into perspective.



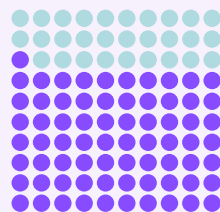


# 71%



of NHS workers share the belief that when utilised correctly, AI has the potential to substantially reduce patient waiting times, as well as areas such as training and education (38%), patient triage (28%), and patient diagnostics (33%).

# 2/3



are confident that AI technology will have a positive impact on the future of healthcare.

# 3 in 10

(27%) of those polled expect real time wearable healthcare trackers to be one of the main advancements the NHS can expect to see in the next five years.

# 64%

of NHS workers are comfortable with the idea of greater adoption of AI and wearable tech.

# 1 in 10

workers (11%) believe that AI could fulfil their current role in its full capacity.





However...

**31%**

of individuals remain sceptical about the use of AI diagnoses, fearing that it could hinder patients from receiving necessary care.

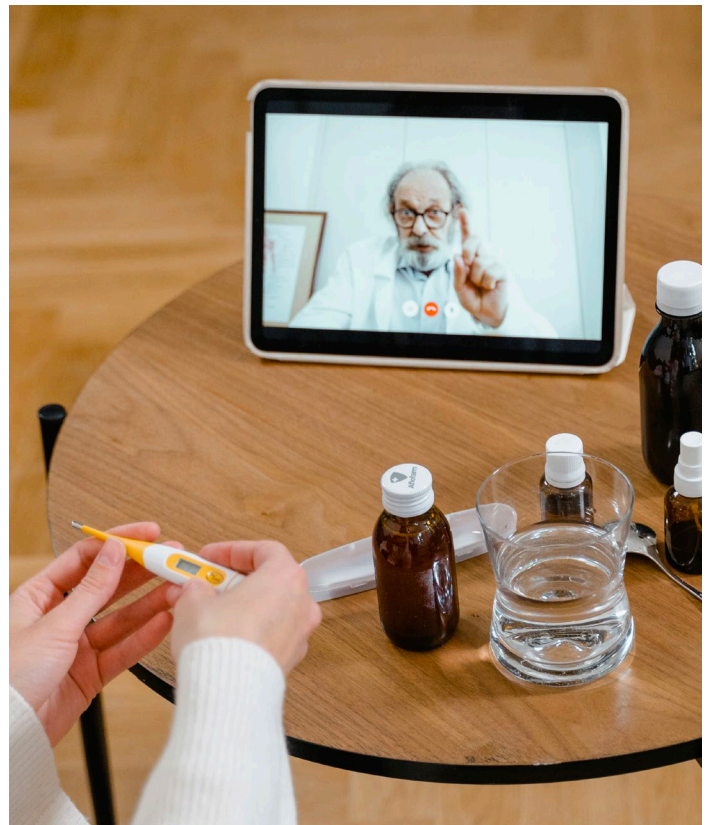
**42%**

of healthcare professionals express concerns that the development of AI capabilities might lead patients to believe they know best.



# Routine telehealth

Increased specialisation in nursing is probable. This could include nurses who specialise in genomics, geriatrics, telehealth, informatics, drug delivery, longevity technologies etc and many other growing fields of medicine. Additionally, advances in medical science have meant that people now live with multiple chronic illnesses. And these will need specialised nursing care.



# 34%

of NHS workers believe virtual consultations and telemedicine will become more prevalent.

# Greater specialisation

Nurses conducting virtual as well as in-person consultations, monitoring patients remotely and coordinating care with other professionals online. Patients are becoming more informed more quickly and in multiple media via the internet, email, apps, and interactive videos. And nurses can find time-savings because they can use video consultations with clinicians without having to physically travel to the hospital from a location in the community.



Part two:

25  
Years  
Time



# Longevity philosophy

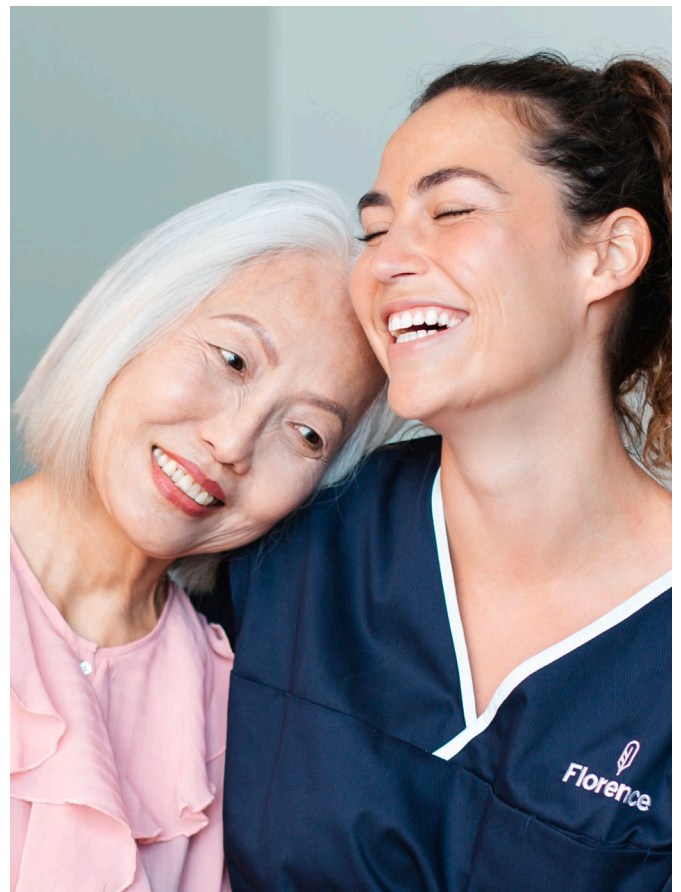
With an already aged population, technology is promising to deliver much longer lives well beyond 100 years old, for much of the population. Nurses will play a crucial role in helping people live their healthiest life as we learn from the supercentenarians what makes for compressed morbidity and minimise the time between when people start to get ill and death.

The idea is to give us a few more years in which we can enjoy a high quality of life, so that instead of suffering from dementia and dying in a hospital bed at the age of 83, you avoid such age-related conditions and instead die on a tennis court at the age of 107.

## Robotics in nursing

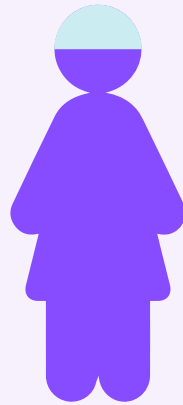
The use of robotics will be a cost-effective provision of the most fundamental or basic of care, freeing up nurses to spend more quality time with patients or more time training on new methods and new regulations. In care homes and hospitals, robots could help with tasks like lifting and moving patients, delivering meals and cleaning. Drones will be used to fetch and carry urgent medicines and vital transplant organs to and from hospitals.

This will require a shift from restorative medicine to preventative medicine, helping more people avoid more serious illness more of the time. As a more proactive approach to patient care it will require nurses to be the first and most frequent line of contact for people seeking advice, particularly as they age. This will emphasise the overall importance of supporting people not just to live longer lives, but longer *healthier* lives.



34%

are concerned about the NHS's ability to provide healthcare to an increasingly ageing population.



95%

agree that the ageing population will increase the demand for healthcare services in the next 25 years.

4 in 10

(41%) think robotics will assist with basic care/admin tasks, freeing up nurses' time. Meanwhile, 27% of those polled expect drone delivered medicine to remote areas to be one of the main advancements the NHS can expect to see within the next five years.

NHS workers identified the top challenges in providing healthcare to an ageing population as:

1 Ensuring sufficient healthcare workforce to meet demand (55%)

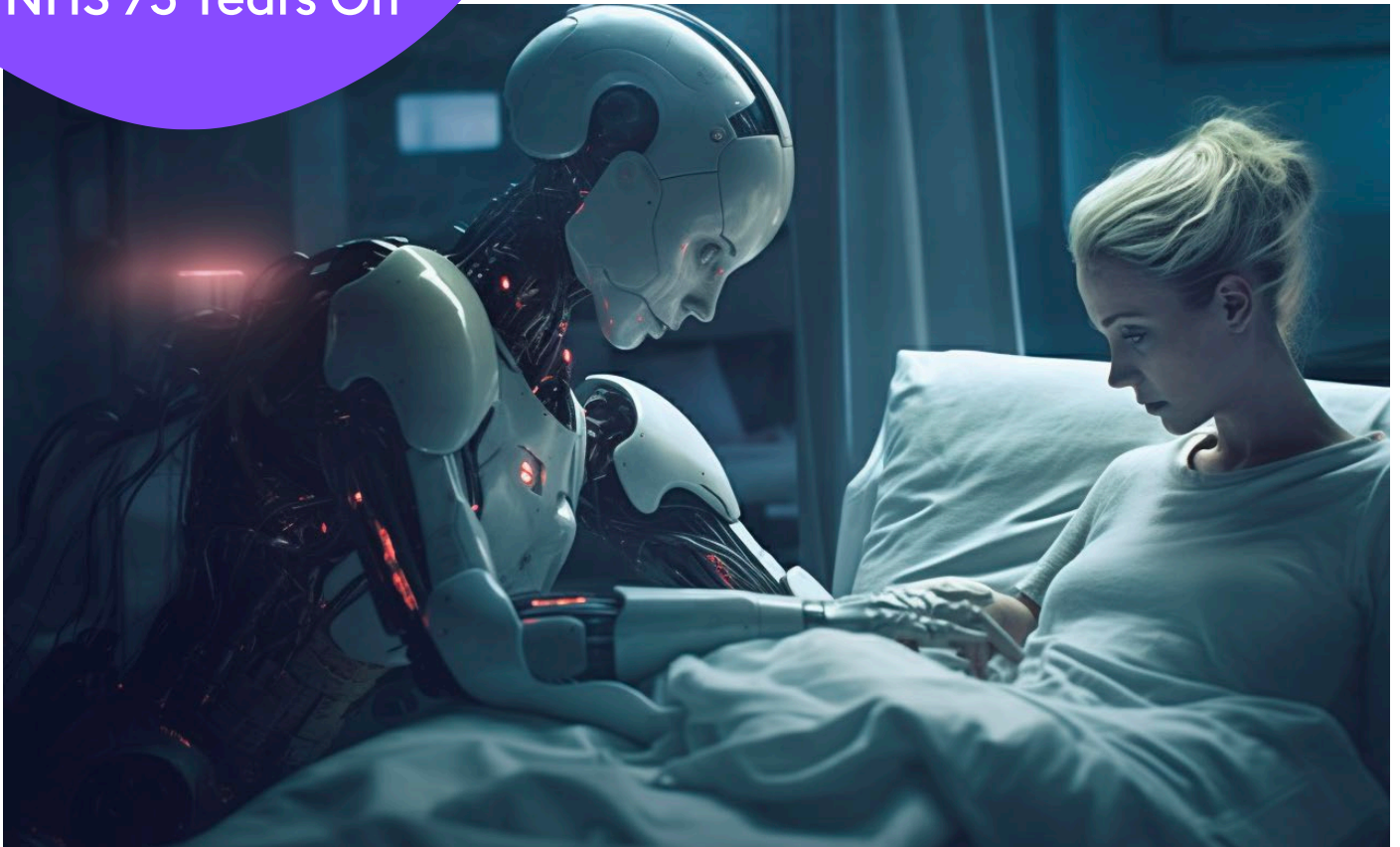
2 Budget constraints (51%)  
Managing a rise in complex healthcare needs that comes from more elderly patients (50%)

3 The staff providing the care are also ageing (50%)

95%



of healthcare workers believe that robots will become part of our day to day lives in healthcare by 2035, with as many as 1 in 5 believing robots could be a reality by as soon as 2030.



# AI colleagues

Nurses will increasingly partner with AI systems, which will help make recommendations, forecast results, and assist with decisions based on the analysis of multiple sources of information, often producing the optimal care plan for an individual patient but based on a multitude of data. These AI systems will be seen as collaborators and the newest non-human contributing members to the patient care team. They will help rapidly synthesise information, complete work, assist with clinical decisions, and improve patient outcomes. The new tasks that AI can take on will be endless, unburdening nurses from the most routine administrative parts of their job.



# Immersive training

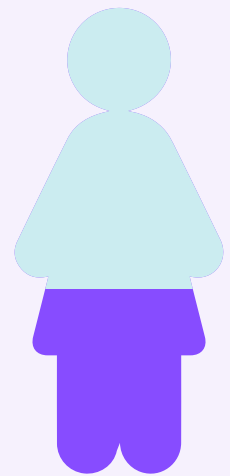
The pace of change will be significantly increased. It will be a challenge to keep up with all the new practices, methods, tools and regulations across all the specialisms of healthcare. High quality, regular, training will take on critical importance. Simulation environments are already used in the training of nurses but over the next twenty years we will go from teaching nursing in a simulated physical/virtual environment to a fully virtual and immersive environment, connecting the mind and the body of the student via a bio feedback loop. This will monitor how nurses cope in training when faced with challenging situations to train them to stay calm in the face of a crisis.

## Almost half

of healthcare workers believe they will be working alongside AI colleagues within the next 25 years.

## 33%

of those polled expect VR training to be one of the main advancements the NHS can expect to see in the next five years.

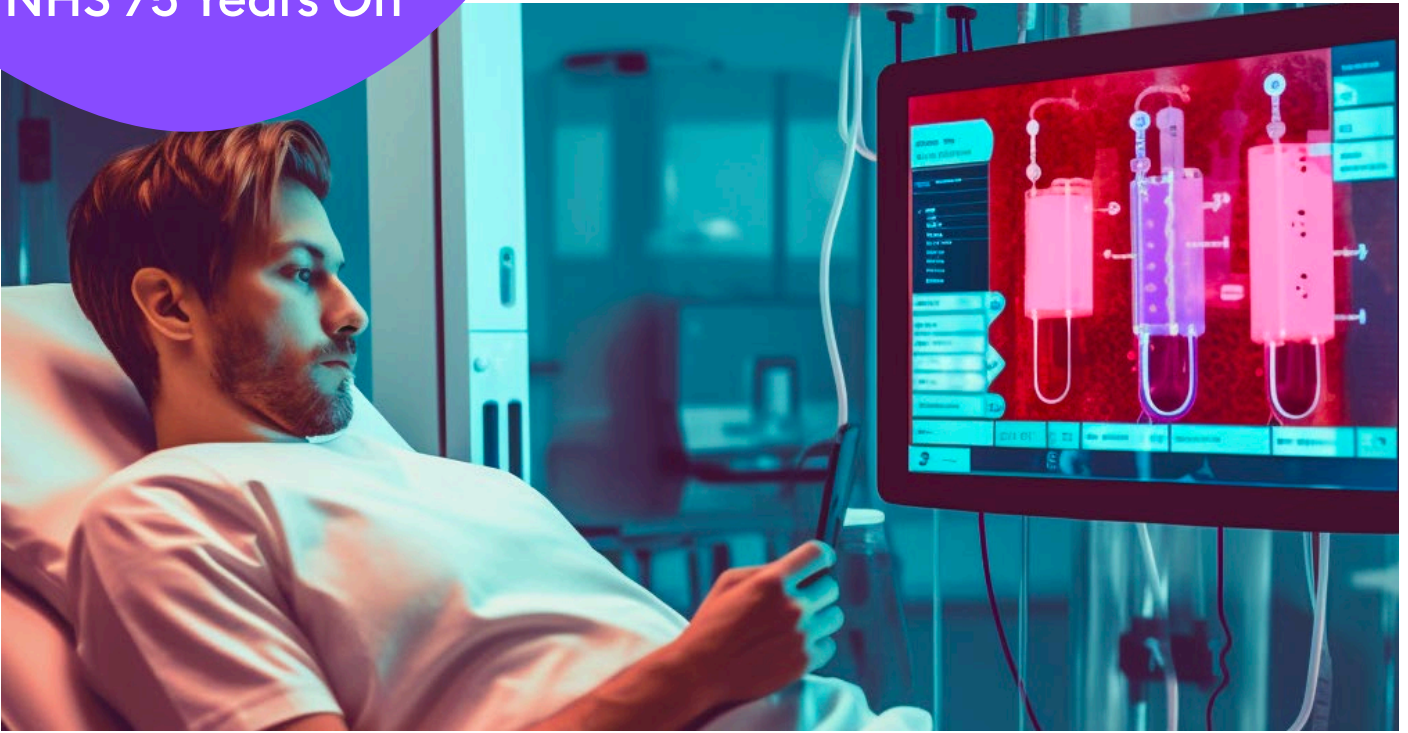


# Part Three:



# 75 Years Time





## Personalised medicine

Society will look back on today's medicine and regard it as mediaeval. The fact that a group of patients are given similar treatment or prescribed the same dosages of a drug will horrify future generations. All medicine will be highly personalised, with treatments tailored to individuals and information collected and analysed in a privacy-protected way. This will be driven primarily by advances in genomics. Nurses will play a crucial role in this helping to interpret genetics information, advise on potential risks, and tailor care plans to individuals' specific genetics profiles.



## Widespread telemedicine

Nurses will be working from remote locations to provide care to patients all over the world. Given that this is possible it is highly likely that *The National Health Service could become the International Health Service with the very best nursing care given across the world being provided by nurses in the UK\** without them having to leave these shores. This form of virtual nursing could include the remote monitoring of patients' health using IoT devices (sensors and other hardware that are programmed to transmit data over the internet or other networks to monitor things like heart rate and blood sugar levels), allowing nurses to keep track of patients' health in real-time, even from a distance - especially if a patient happens to live abroad or be a frequent traveller, or is just on holiday and needs the peace of mind that comes with round-the-clock remote care.

The main advancements  
NHS workers expect to see are:

**38%**

Personalised medicine

**36%**

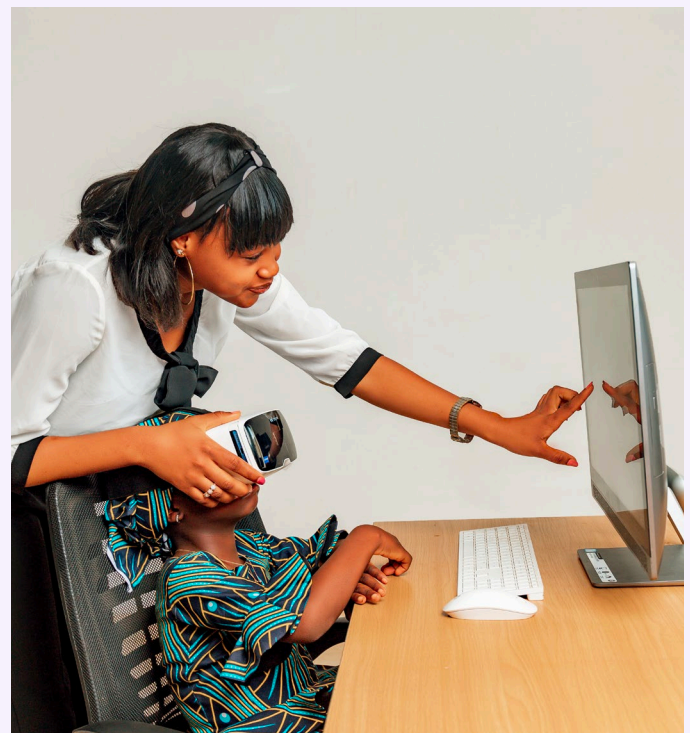
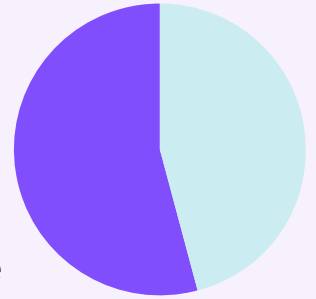
Virtual reality assessments

**34%**

Lab grown organs  
for transplants

**46%**

Almost half of  
healthcare workers  
expect doctors to be  
extinct by 2098.

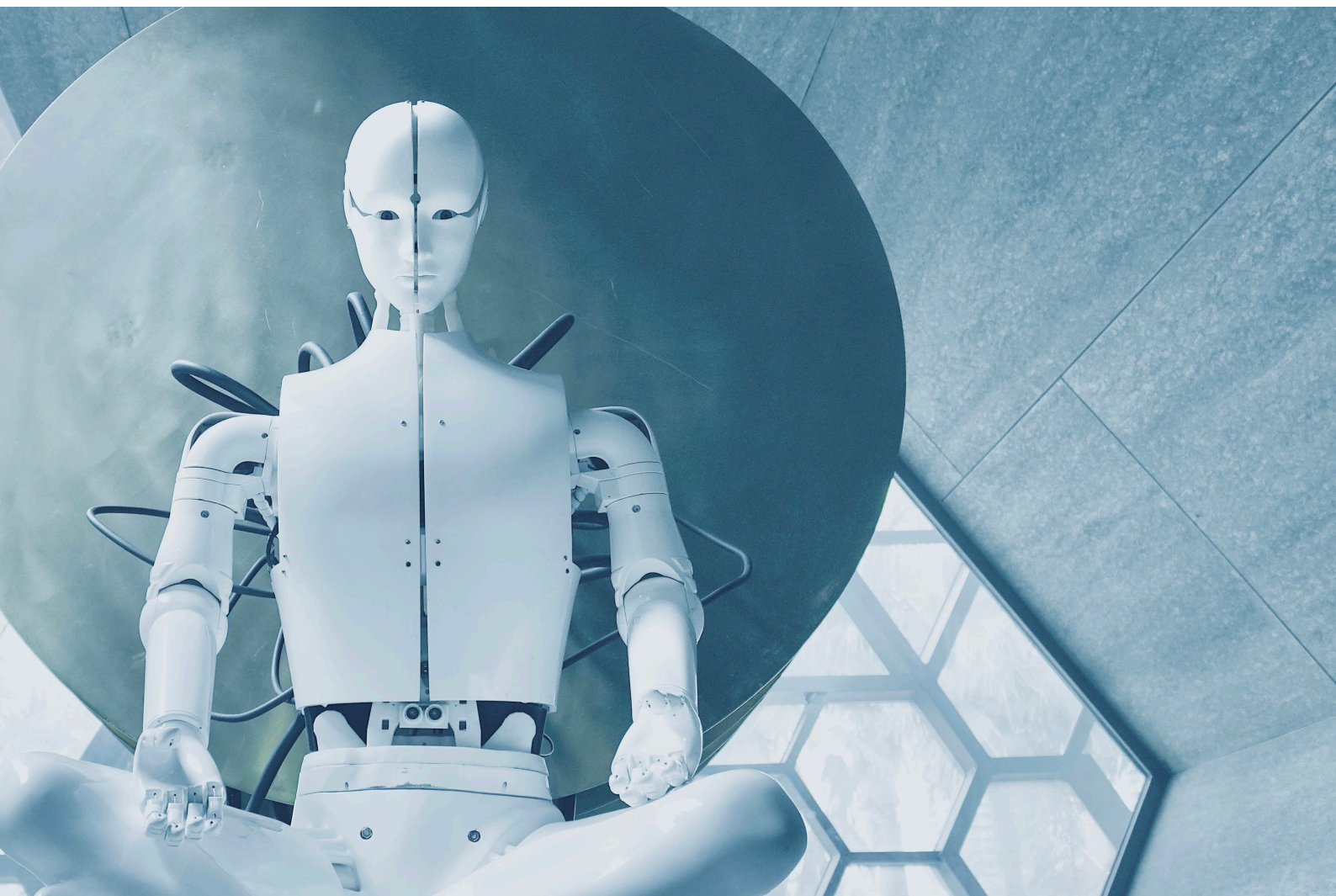


# Postword

By Tracey Follows

*It has been my absolute pleasure working on this report with Dr. Charles Armitage. It's important to note that while these technologies promise to revolutionise nursing; the human touch, empathy and personal interaction in nursing will remain essential, and perhaps become even more so. Technology will serve as a tool to enhance nursing practice, not replace the vital human element that makes healthcare professionals what they are.*

*This report is clear that AI is going to impact every industry and discipline, including nursing where it will help nurses to take on data interpretation and diagnosis roles, something that is traditionally done by doctors. Looking ahead, it is clear that nurses will have AI as their co-pilot to help inform, analyse, diagnose and advise patients - as well as care for them - in the future. It will free nurses up from admin and allow them to focus even more on the human in front of them, or even the human remote from them.*



# Accreditation to Florence

Florence is an innovative technology company for the NHS and social care. Its free app connects nurses, carers and support workers with shifts and e-learning, while healthcare organisations are given a full suite of powerful workforce management tools.

Florence, which has raised a total of \$50 million (£35.5 million), was launched in 2017 by NHS doctor Charles Armitage and ex-British Army officer Dan Blake as a response to the UK's care staffing crisis. The company is on a mission to fix the healthcare staffing gap and make care outstanding for everyone. Florence works with 500,000 e-learners, 90,000 workers and over 4000 organisations.

Florence Academy exists to empower health and social care professionals, by providing the tools they need to deliver high-quality care. Since launching in 2018, Florence Academy has delivered over 6 million online courses to 500,000 global learners, and now helps over 120 care organisations train their own staff and remain compliant. Florence Academy is provided as a free benefit for all Florence professionals; certificates cost £2.49+ VAT for those not registered to work with Florence, and bespoke packages are available for care organisations. Learners are able to learn at their own pace, choosing either individual courses or collections curated by experts.

**Find more about Florence**  
at [www.florence.co.uk](http://www.florence.co.uk)

