Deloitte.

The future unmasked
Predicting the future of
healthcare and life sciences
in 2025

Prediction Four
The who, what and where of work rearchitected

Deloitte Centre *for*
Health Solutions

Foreword

Welcome to our fourth prediction *The who, what and where of work rearchitected* from our report, *The future unmasked: predicting the future of healthcare and life sciences in 2025*. This is the fourth of ten predictions, all of which have been informed by emerging evidence of the impact of the COVID-19 pandemic on society and the health ecosystem. They have also been shaped by our research insights including our global 2040 Future of Health campaign. This fourth prediction looks at what we expect the world in 2025 to be like for healthcare professionals whose ways of working have been augmented by advanced technologies.

In response to the pandemic, health systems had to reorganise services rapidly and train staff to work in new ways in unfamiliar teams, whilst developing effective ways of supporting the wellbeing of the workforce and deliver safe care to patients. One notable outcome is an accelerated adoption of digital technologies including virtual consultations and new robotic processes to help support service delivery.

In 2025, advances in AI-enabled robotics, cognitive automation and digitalisation are helping HCPs to work more productively, including 'rearchitecting' the who, what, where and how work is done. There is more focus on cognitive, emotional and analytical skills and less on repetitive, administrative tasks. Task shifting and task reorganisation are commonplace leading to a diverse, multi-professional, blended, workforce that is employed across permeable boundaries providing care wherever needed, for example, in the community, in people's homes, and via mobile diagnostic clinics.

The fourth prediction is brought to life through a series of portraits of the experience of individuals in 2025, with reference to the evidence today to predict what the future might look like tomorrow.

Stay tuned for the subsequent predictions in our series of ten.

Karen Taylor
Director
UK Centre for Health Solutions
+44 (0) 7825 793729
kartaylor@deloitte.co.uk

Shivani Maitra
Partner
UK Leader – Future of Work
Life Sciences and Healthcare
+44 20 7303 7381
shmaitra@deloitte.co.uk

The who, what and where of work rearchitechted

Healthcare professionals, augmented by technology and life-long learning, have transformed their ways of working

Prediction: In 2025, advances in AI-enabled robotics, cognitive automation and digitalisation are helping HCPs to work more productively, including rearchitecting the who, what, where and how work is done. There is more focus on cognitive, emotional and analytical skills and less on repetitive, administrative tasks. These changes enable all HCPs to practice at the top of their professional license, enriching career development opportunities, improving the attractiveness of the profession and creating new specialisms. Task shifting is commonplace leading to a diverse, multi-professional, blended, workforce that is employed across permeable boundaries providing care wherever needed. All HCPs participate in multi-professional training to enable more adaptive, agile ways of working. This training uses simulation and virtual reality to equip HCPs to use technological innovation. This enables staff to adapt their skills to work where and when needed. Staff are also trained in understanding the application and ethics of genomics, digital health and AI in determining treatments and are able to convey this to patients.

The world in 2025

- New ways of working, augmented by automation and robotics, have helped providers with task-shifting and role enrichment to create a sustainable and flexible workforce.

- Employers refine the working culture and working conditions including enabling HCPs to practice at the top of their license as part of a blended workforce, augmented by AI-enabled clinical decision aids, robotics and other digitally enabled insights.

- Training is focused on developing cognitive, digital, emotional and analytical skills to enable HCPs to communicate effectively with each other and with patients, whether face-to-face or remotely.

- HCPs are confident in discussing the results of AI-enabled diagnostics and genomics testing with staff and patients.

- HCPs proactively respond to intelligent alerts from continuous vital signs monitoring or from digital telehealth coordinators, providing effective advice and real-time interventions.

- The provider infrastructure is configured to assist HCPs with data sharing across organisational boundaries.

- Pharmacists' have a greater role as caregivers and provide online and video consultations and monitor and track medication adherence remotely through smart pill dispensing devices.

- Some health tasks are conducted by physical robots delivering and administering medication, taking and documenting vital signs and conducting minor procedures. Remote and robot-assisted surgeries for several major procedures are commonplace.

Conquered constraints

- **Skills and talent:** Recruitment strategies have encouraged a wide range of more diverse individuals from more varied backgrounds to become HCPs. All HCPs receive core training, using blended learning methods, including classroom and on-line digital training and VR to increase expertise. There is an emphasis on continuous development of core human traits such as problem solving, communication and engagement. Professional competencies in genomics, digital health, data analytics and ethics have become part of the curricula. All HCPs are also expected to have an understanding of how the health system works, with an increased focus on agile, adaptable and collaborative working across the health ecosystem.

- **Funding:** National and local governments help determine and allocate training budgets and align incentives and funding models to create a flexible and sustainable workforce. Employers provide opportunities for staff to develop their skills, underpinned by consistently applied remuneration packages.

- **Regulations:** Regulators and professional bodies collaborate to ensure compliance with safe staffing models. They also partner with academia to design education curricula, to align learning needs with the evolving roles and responsibilities of the technology-enabled healthcare workforce.

- **Data and interoperability:** Staff understand data provenance, curation, integration and governance, and the ethical, data privacy and security considerations associated with technology. They obtain the benefits of data sharing while complying with robust information governance and data security standards.

Imagine the world in 2025

A community pharmacist supporting patients virtually in 2025

Olivia is a community pharmacist who oversees the care of Ayesha, a 60 year-old patient with Parkinson's disease alongside other comorbidities. Because of Ayesha's complex medication regime, Olivia provides her with a monthly supply of medication to be taken via a smart medication dispenser. Olivia loads the dispenser at the pharmacy using an automated robot and programmes it to release medication for Ayesha at set times, and to sound an alert when medication is released. The device is registered to Ayesha's smartphone app, and if the medication is not taken at the correct time Olivia is alerted since Ayesha's medications are time-critical. One day, Olivia is alerted via a SMS to the community pharmacy's smartphone that Ayesha has not taken two scheduled doses of her Parkinson's disease medication. She calls Ayesha via an online consultation platform and carries out a structured medication review to check if Ayesha is okay, and asks whether she requires any counselling or advice relating to her medication or condition. Ayesha explains that she had taken her smart dispenser to dinner with a friend the previous evening and had misplaced it. Olivia arranges for a new smart dispenser to be delivered to Ayesha on the same day, to ensure that she does not miss any further doses.

A smart hospital enabling healthcare professionals to work differently

Dr Patel is the Chief Clinical Information Officer of a brand new 'hospital' which opened its doors in 2022, following a $2.4 billion investment and a decade of planning and construction. The hospital has 400 patient rooms and a robot-enabled infrastructure with consumables and medical equipment delivered to each room via a fleet of 23 self-driving robots, each the size of a large office printer. The robots have their own infrastructure and a dedicated elevator, and they move through corridors at two miles per hour, transporting heavy items such as rubbish, bedding and food. There is also a machine for dispensing pills in sealed-box packs (which is connected to a medication distribution and electronic health registration system). Each room is equipped with a smart TV (which also enables daily menu selection and translation facilities), IoMT-connected medical devices, and a bed and chair with in-built sensors to detect when the patient gets in or out. Patients download a smartphone app to enable them to navigate the hospital. Dr Patel's philosophy is that it's not about the technology but is about a hospital change management programme with AI-enabled technology supporting staff to work differently. He believes they will see a positive return on the investment and improved patient outcomes.

Expediting a patient's safe diagnosis and treatment

Tony, 80, is experiencing a chesty cough with sputum and has been feeling increasingly unwell. Tony uses his general practice's AI-enabled clinical assessment tool which suggests a possible diagnosis of pneumonia and recommends that he should speak with his doctor immediately. Dr Jones receives an urgent electronic alert to call Tony. Dr Jones reviews Tony's medical notes and can see that Tony is generally fit and healthy, but wellness data fed through in real time from wearable devices show that he has a low temperature of 35.5°C, an increased heart rate of 91 beats per minute and a breathing rate of 22 breaths per minute. These results, coupled with Tony's symptoms, suggest he may be at risk of developing sepsis related to pneumonia and so requires immediate medical attention. Dr Jones arranges to speak with Tony in an online consultation and arranges a zero emissions e-ambulance that has a video and voice collaboration platform. Dr Jones is able to communicate virtually with the paramedics and send through Tony's results via an API integrated platform. This ensures that the e-ambulance is equipped with an appropriate sepsis biomarker test kit and the specific antibiotic medication to treat the infection at the point-of-care without delay.

Note: All elements on this page are from a perspective of 2025 and are fictional

Evidence in 2020

Area9 has developed a blended education platform to customise healthcare learning experience

Area9 have partnered with the New England Journal of Medicine (NEJM) Group to create the first-of-its-kind medical education platform, NEJM Knowledge+, which uses smart technology that adapts to clinicians' learning goals, pace of learning and knowledge gaps to deliver customised information and training. Research from 2020 shows physicians who used NEJM Knowledge+ performed better on their board exams by a statistically significant margin than a well-matched control group. Area9, has collaborated with the American Heart Association and Laerdal Medical to deliver a more adaptive streamlined, personal and tailored resuscitation learning experience for healthcare professionals. Area9's Rhapsode™ learning and publishing platform uses AI to deliver a personalised and efficient approach that measures time-to-completion, confidence and self-awareness to more accurately assess and respond to each learner's individual competence and performance.[52,53]

RITA: Referral and Intelligent Triage Analytics

RITA uses the latest AI and robotics technology to automatically triage incoming cancer referrals and assign patients to appropriate pathways. Deloitte initially completed a proof-of-concept with a gastroenterology department in a Scottish hospital, with promising results. In the proof-of-concept, RITA developed an algorithm based on analysing over 24,000 incoming referrals, using natural language processing to identify patterns in the referral letters and assign them to a specific pathway. RITA displayed a high level of accuracy in triaging patients with suspected cancer. The project has now been extended to two other cancer referral processes and is following the necessary regulatory processes.[54]

CMR Surgical Ltd, widening adoption of robotic surgery

Robot-assisted minimal access surgery (MAS) reduces blood loss, recovery time, intraoperative and postoperative complications and pain when compared to open surgery, yet uptake remains low. To increase adoption and improve outcomes, CMR Surgical Ltd, by working collaboratively with surgical teams, developed the Versius® Surgical Robotic System, for use in MAS. The system aims to empower surgeons to transform how surgery is performed across the world. The system has a novel, mobile design with independent arm carts and surgical console, with wristed instrument tips providing seven degrees of freedom and a 'game controller' handgrip design. It is approved for use across Europe with CMR Surgical partnering with surgeons and hospitals. In bio-mimicking the human arm, Versius® has the ability to improve team communication, the surgeons' work environment and career longevity.[55,56]

Patient first: how Karolinska University Hospital is transforming to meet future demands of healthcare

At Karolinska University Hospital in Stockholm, Solna, new operating models are designed around patient care flows, instead of traditional clinical departments. For example, patients with heart and vascular conditions are treated in an integrated manner, with specialists from functions such as emergency medicine, imaging and cardiology working together – often in the same building or corridor. This new operating model is strengthening cooperation between different functions, improving patient care, and delivering better outcomes.[57]

Virtual reality is reshaping training of healthcare professionals

Virtual reality is being used for medical education. Embodied Labs has created a programme called We Are Alfred that simulates elderly patients' real-life experiences and trains healthcare workers to understand a patient's fears.[58,59]

Wireless StethoMe rolls out AI medical device following major deals with European telemedicine providers

Polish telemedicine innovations company StethoMe has announced that it will be rolling out an AI wireless stethoscope following recent collaborations with major telemedicine providers MaQuestionMedicale and HomeDoctor. The company is also in talks with other providers across Europe and hopes to expand operations.[60]

Liverpool University chooses 'Better' way to teach e-prescribing

Liverpool John Moores University has teamed up with Better to teach nursing and pharmacy students' about digital prescribing practices. The university will use Better's OPENeP electronic prescribing and medicines administration (EPMA) solution as part of student's learning. It's aimed at enabling students to learn about the prescribing, dispensing and administering medicines electronically.[61]

The COVID-19 impact
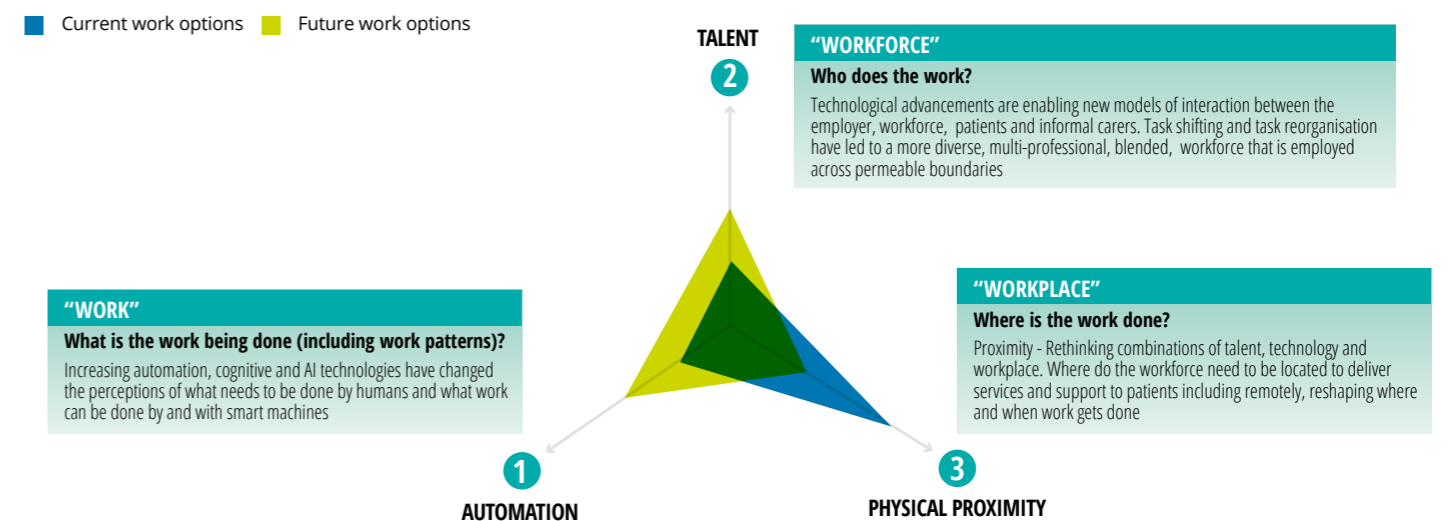
Deloitte view on the impact of COVID-19
COVID-19 has had an unprecedented impact on healthcare services across the world. Health systems had little time to prepare and in the shortest of time frames had to reorganise services, train staff to work in new ways in unfamiliar teams, and develop effective ways of supporting the wellbeing of the workforce and deliver safe care to patients. All in the absence of suitable treatments and a real risk of staff acquiring an infection themselves. The response was an unprecedented transformation programme implemented in weeks that might otherwise have taken years. One notable outcome is an accelerated adoption of digital technologies including adopting new robotic processes to help support service delivery. Hospitals are using data analytics and automated dashboards to ensure staff are working in the most optimal and efficient manner. A crucial enabler has been the growing use of connected care solutions, such as telehealth and remote patient monitoring, technology-enabled ways of diagnosing, monitoring and treating patients, eTriage systems and simulation models for emergency departments and outpatient and primary care consultations pivoting to become telehealth services. New approaches to delivering care have also emerged, from drive-through testing centres to pop-up walk-in centres and vaccination clinics.

AI-enabled platform REiLI, supporting radiologists in assessing the impact of COVID-19 on patients' lungs
During the COVID-19 pandemic, hospitals in the Italian Lombardy region faced unparalleled pressures, and had to reorganise services swiftly to tackle the influx of patients with serious breathing difficulties.

Vimercate Hospital, a HIMSS 6 hospital leading in digital transformation, collaborated with Fujifilm to implement an AI platform, REiLI, to help reduce the impact caused by the rapid spread of COVID-19 and to deliver a timely response to the evolving pandemic. REiLI's processing of CT scans and chest X-rays (CXR) provides important support for radiologists, giving them a rapid, objective assessment of zones of the lungs for evaluating the presence of the pulmonary parenchymal consolidation caused by the virus. The AI data supports reporting on daily examinations aimed at monitoring the development of the disease, and also supports clinical analysis and decision making. REiLI was installed at the hospital in just two weeks. During the first few months of the pandemic more than 900 cases of COVID-19 lung disease were identified using this more precise and timely approach to diagnosis.[62]

The who, what and where of work rearchitechted

■ Current work options   ■ Future work options

TALENT

② **"WORKFORCE"**
Who does the work?
Technological advancements are enabling new models of interaction between the employer, workforce, patients and informal carers. Task shifting and task reorganisation have led to a more diverse, multi-professional, blended, workforce that is employed across permeable boundaries

① **"WORK"**
What is the work being done (including work patterns)?
Increasing automation, cognitive and AI technologies have changed the perceptions of what needs to be done by humans and what work can be done by and with smart machines

③ **"WORKPLACE"**
Where is the work done?
Proximity - Rethinking combinations of talent, technology and workplace. Where do the workforce need to be located to deliver services and support to patients including remotely, reshaping where and when work gets done

① **AUTOMATION**   ③ **PHYSICAL PROXIMITY**

Source: Deloitte

Contacts

Karen Taylor
Director
UK Centre for Health Solutions
+44 (0) 7825 793729
kartaylor@deloitte.co.uk

Sara Siegel
Lead Partner
Public Sector Health
+44 (0) 20 7007 7098
sarasiegel@deloitte.co.uk

Shivani Maitra
Partner
UK Leader – Future of Work
Life Sciences and Healthcare
+44 20 7303 7381
shmaitra@deloitte.co.uk

Hanno Ronte
Partner
Life Sciences and Healthcare
+44 (0) 20 7007 2540
hronte@deloitte.co.uk

Contact information
To see more publications from the Deloitte UK Centre for Health Solutions, please visit:
www.deloitte.co.uk/centreforhealthsolutions

Deloitte UK Centre for Health Solutions, 1 New Street Square, London EC4A 3HQ

Endnotes

52. Michael G. Healy et al., "Association of Use of the NEJM Knowledge+ Product and Performance on the ABIM IM-MOC Exam", *Teaching and Learning in Medicine*, September 15, 2020.

53. American Heart Association, "Resuscitation science, education and technology leaders unite to bring tailored and personalized learning approach to resuscitation quality improvement solutions", press release, October 14, 2020.

54. Karen Taylor and Francesca Properzi, *Shaping the future of UK healthcare: Closing the digital gap*, Deloitte, June 2019.

55. Luke Hares et al., "Using end-user feedback to optimize the design of the Versius Surgical System, a new robot-assisted device for use in minimal access surgery", *BMJ Journals*, accessed October 28, 2020.

56. CMR Surgical, "Business Update", June 30, 2020.

57. Stockholms Handelskammare, "Stockholm växer snabbast i Europa", October 15, 2015.

58. Raji Sahota, "Embodied Labs Puts Your Mind in an Elderly Body", *engineering. com, Inc.*, September 18, 2020.

59. Elyse Wanshel, "Virtual Reality Lets Med Students Experience What It's Like To Be 74", *HuffPost*, June 03, 2016.

60. Sophie Porter, "StethoMe rolls out AI medical device following major deals with European telemedicine providers", *MobiHealthNews*, April 16, 2020.

61. Andrea Downey, "Liverpool University chooses Better way to teach e-prescribing", *Digital Health*, September 2020.

62. Karen Taylor et al., *Digital transformation: Shaping the future of European healthcare*, Deloitte, September 2020.

Deloitte.