



# IMAGINE 2030

**WHAT WILL HEALTHCARE LOOK LIKE IN 2030?**

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# What will healthcare look like in 2030?

Advances in healthcare and technology have been growing at a rapid rate. But will they meet the service demands of an ageing population and emerging health concerns? To be ready for 2030, we must use technology to accelerate a significant transformation of the current healthcare paradigm—starting today.

## Caring for an ageing population

People are living longer than ever before. Older citizens can continue to lead independent lives and contribute to society with spending power, tax payments, donations and volunteered time<sup>1</sup>. But they must stay healthy to do so.

Keeping an ageing population healthy presents new challenges for healthcare providers. As people live longer, there are more patients to care for, but fewer caregivers. There is an impending workforce shortfall in nursing, general practice, specialties (e.g. emergency, geriatric and psychiatric medicine) and social care.<sup>2</sup>

Patients' conditions become increasingly complex and costly as they age. They are more likely to succumb to multiple conditions—known as polymorbidity, or comorbidity.

Beyond the personal costs, there are financial costs to consider. Older patients with long-term conditions will require an estimated £5 billion additional expenditure by 2018.<sup>3</sup> Calculating the cost of care is complex, as solving one problem may create other issues in years to come. Early

intervention of a life-limiting condition might appear to be a cost avoidance. However, from a purely economic standpoint, these will be deferred costs as these patients live longer and will likely develop other conditions that require care.

By 2030, healthcare will also undoubtedly need to address unpredicted crises that affect all ages. For example, microorganism mutations can create new diseases, such as increased frequency of "superbugs"—bacteria that have become resistant to treatment due to overuse of antibiotics. Or the ecological changes that have caused surges in disease-spreading mosquito populations. Healthcare must be ready to quickly identify and respond to epidemics including epidemics of diseases that are yet to be identified.

"Henry Ford said, 'If I'd asked people what they wanted, they would have asked for a better horse,'" said Tracey Cotterill, Director of Finance and Business Services, Medway Maritime Hospital. "We are all seeking the marginal benefit of doing the same things more efficiently. There is insufficient resource to meet future demand unless we transform through improved productivity."

1 Office for National Statistics (2011). Statistical Bulletin. <https://www.kingsfund.org.uk/time-to-think-differently/trends/demography/ageing-population>

2 *NHS and social care workforce: meeting our needs now and in the future?* Candace Imison, Richard Bohmer. [https://www.kingsfund.org.uk/sites/files/kf/field/field\\_publication\\_file/perspectives-nhs-social-care-workforce-jul13.pdf](https://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/perspectives-nhs-social-care-workforce-jul13.pdf)

3 Department of Health (2012). Report. Long-term conditions compendium of Information: 3rd edition

# AGEING POPULATION

## PROJECTIONS FOR THE UNITED KINGDOM

# +39%

INCREASE IN THE  
NUMBER OF PEOPLE  
AGED 65-84 YEARS  
BY 2032

INCREASE IN THE  
NUMBER OF PEOPLE  
85 YEARS AND  
OLDER BY 2032

# +106%

# +61%

INCREASE IN NUMBER OF  
OLDER PEOPLE WITH BASIC  
CARE NEEDS BY 2030

PEOPLE WITH HEARING  
LOSS BY 2031

# 14.5M

# 4M

PEOPLE WITH SIGHT LOSS BY  
2050, CAUSED BY AGEING AND  
UNDERLYING CAUSES SUCH AS  
DIABETES

COST OF DEMENTIA  
CARE BY 2026, AN  
INCREASE OF 61%

# £24B

# +146%

INCREASE IN THE  
NUMBER OF PEOPLE  
WITH DEMENTIA OVER  
THE NEXT 30 YEARS

DECREASE IN THE  
NUMBER OF NURSES  
BY 2022

# -28%

Snell T, Wittenberg R, Fernandez J L, Malley J, Comas-Herrera A, King D (2011). Discussion Paper. *Future Demand for Social Care, 2010 to 2030: Projections of Demand for Social Care and Disability Benefits for Younger Adults in England: Report to the Commission on Funding of Care and Support*, PSSRU 2800/2.

Action on hearing loss (2012). Statistical Bulletin. Facts and figures on hearing loss.

Department of Health (2009). Report. *Living well with dementia. A national dementia strategy*. [https://www.kingsfund.org.uk/sites/files/kf/field/field\\_publication\\_file/perspectives-nhs-social-care-workforce-jul13.pdf](https://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/perspectives-nhs-social-care-workforce-jul13.pdf)

*“As we look to 2030, everyone engaged in healthcare is focused on creating a system that consistently delivers quality care, improves health outcomes and delivers better value. Essential elements in reaching this goal include leveraging advanced data and analytics to ensure the best possible care decisions; gaining a deeper understanding of patients to effectively engage them in the right support and treatment at the right time and in the right setting; and finally, modernizing infrastructure using innovative technologies to improve patient experiences and system efficiency.”*

—David Orbuch, Optum UK Managing Director

## How technology will transform healthcare

Technology must be embraced fully to meet growing demands and costs. We’re already seeing advanced management of many diseases; for example, cancer mortality rates are dropping in countries where options for earlier diagnosis and better treatment are available.<sup>4</sup>

Transformation depends on healthcare being able to harness the power of technology to enable:

1. Clinicians to diagnose earlier and intervene more effectively
2. Patients to take a more active, central role in their own care
3. Coordination across all care settings

These three capabilities will prepare healthcare for 2030 and beyond.

### 1. Enabling clinicians to diagnose earlier and intervene more effectively

From cutting-edge technology, to harnessing the power of big data and computing power, clinicians have more tools at their fingertips than ever before. Each technology that enables earlier diagnosis and more effective treatment brings us closer to our goal of achieving better outcomes for patients.

<sup>4</sup> World Health Organization. International Agency for Research on Cancer [http://globocan.iarc.fr/Pages/fact\\_sheets\\_cancer.aspx](http://globocan.iarc.fr/Pages/fact_sheets_cancer.aspx)

## CITIZEN 2030

### New hope for defeating diabetes

Mia, age 9, was recently diagnosed with Type 1 diabetes. She has an insulin pump the size of a pack of cards connected to her at all times. Each morning, her first task is to exchange the battery pack and insulin container.

The battery charger downloads and sends data back to the team that oversees her care. The device monitors her blood sugar every few minutes and calculates and delivers the optimal dose of insulin. Day-to-day monitoring is needle free, and automatically orders her next batch of insulin, which is delivered by drone.

Meanwhile, Mia is also preparing for a pancreatic cell transplant. Specifically cultured cells reduce the chances of her body rejecting them. She won't even need an operation; the cells will be given through an injection and will find their way to her abdominal cavity where they will settle and regulate her blood sugar.

Mia and her parents have become mini-experts on Type 1 diabetes through the local virtual network, where they have connected with other patients and families who have already benefitted from a pancreas cell transplant.

Mia's diabetes may well be normalised by the cell transplant, but her care team will continue to monitor her to ensure the cells continue functioning adequately throughout her adult life.

### MORE TESTING AND TREATMENT OPTIONS OUTSIDE OF THE HOSPITAL

Today, clinicians rely heavily on inpatient testing and treatment. Tomorrow will bring more mobile, less invasive options, such as in diagnostic imaging.

Capsule endoscopies can enable excellent visualisation of the digestive tract, for example, without invasive and resource-intensive traditional methods. New breast screening devices used in developing nations deliver remote capabilities for imaging for \$10 per scan.

Dr Yen-Ching Chang is the Clinical Lead for Radiotherapy at University College London Hospitals (UCLH) and specialises in paediatric radiotherapy at UCLH and Great Ormond Street Hospitals. UCLH has been working with Google DeepMind on developing new software that aims to reduce some of the repetitive manual tasks that, until now, have required a trained clinician to plan radiotherapy treatment for each patient.

The software identifies normal tissues to help limit the dose to these tissues. By collating multiple anonymised example images that have already been marked up for radiotherapy treatment, the software can "learn" the standard patterns of normal tissue (e.g., parotid glands, brainstem or optic nerves) and hence can delineate these tissue accurately. The clinician is then able to verify these areas have been correctly

delineated and focus on the abnormal tissue.

Dr Chang said, "This software will be transformative for our specialty. It can take up to four hours to draw the tumour volumes as well as delineate the normal tissues on a set of scans for treatment for a single patient. We envisage that the software will help reduce that time by up to 75%. This productivity enhancement means we can plan treatment safely and more efficiently, freeing up our time for other aspects of our clinical work. This is also crucial since the Royal College of Radiology has predicted there will be huge shortfall in highly qualified radiotherapy doctors in the near future whilst we know one in three of our ever-growing population will require cancer treatment at some point. Artificial intelligence will be key to plugging part of this resource gap."

Greater use of telemedicine will further limit the need for patients to physically visit their doctors. As polymorbidity increases, this will be key so that patients are not facing multiple time-consuming journeys and waits to see their teams of clinicians. In parallel, those patients who do require in-patient care are likely to be more seriously unwell. Using a combination of operational efficiency and predictive analytics, hospitals of the future must optimise valuable, expensive resources to balance elective and emergency care.

Virginia Mason Hospital in Seattle has embedded principles taken directly from the Japanese manufacturing industry, which have improved patient safety whilst also enhancing efficiency and quality of care. Healthcare organisations worldwide are emulating this successful methodology.<sup>5</sup>

### REAL WORLD DATA (RWD) TO SPEED AVAILABILITY OF NEW TREATMENTS

Controlled clinical trials are quickly becoming unseated by the availability of consistent, quality data collection for population-sized analysis. Vast quantities of data and enhanced computing power enables pure statistical comparisons of new treatments against old, providing a more realistic and updated view.

Wearable physiological monitoring devices and the Internet of Things are facilitating more cost-effective management of patients through telemetry and telemedicine. This in turn improves epidemiological predictions as well as the ability to analyse the effect of treatments on large populations of patients in a real-world environment.

Using longitudinal data can help predict population-sized health trends. For example, health authorities could identify flu outbreak patterns by tracking the consumer patterns of buying over-the-counter remedies. It can also build predictive models for longer-term, more serious conditions.

### BIG DATA WILL BUILD PREDICTIVE MODELS TO MANAGE CHRONIC DISEASE

Research shows that finding and connecting with prediabetic patients can help prevent or delay diabetes and improve outcomes. Allscripts Analytics has analysed more than 48 million de-identified patient records and is combining it with other types of data, including claims data, consumer

<sup>5</sup> <https://www.virginiamasoninstitute.org/about/>

information and environmental data. Today, the team is applying a rules engine to find patients who fit U.S. Centers for Disease Control (CDC) criteria and are at risk for diabetes.

“We followed these patients over four years and we found that 80% of these patients went on to develop diabetes,” said Dr Fatima Paruk, Chief Medical Officer of Allscripts Analytics. “This unexpected finding is much higher than the CDC findings of one in three patients. But our ability to conduct this large-scale analysis and find a huge progression to diabetes demonstrates that this problem may be grossly underestimated.”

Uncovering these insights will eventually be able to help clinicians predict which patients will develop diabetes. By embedding algorithms into electronic patient records (EPRs), it can help with earlier identification and intervention.

## PRECISION MEDICINE WILL ENABLE MORE PERSONALISED TREATMENT PLANS

Precision medicine is an emerging approach in healthcare that combines genetic, environmental and lifestyle information for each patient. Healthcare is overcoming some of the challenges that kept precision medicine from the mainstream. For example, there is an ever-increasing number of diseases that can be diagnosed using genetics, while at the same time, the costs to sequence a human genome are dropping.<sup>6</sup>

Health professionals have had to treat their patients with a trial-and-error approach to drugs to control symptoms and diseases. Pharmacogenomics, the study of how people’s genes affect their response to medications, can change that paradigm and potentially shorten the treatment timeline. Each person metabolises medications at different rates, and certain genetic variants can help clinicians predict which medication will be most effective.

“With clinical-genomic information about their patients, psychiatrists can more quickly assign the right medication, with the right dosage,” Dr Joel Diamond, Chief Medical Officer of 2bPrecise. “These capabilities have significant implications for improved, personalized care plans.”

## 2. Engaging patients to take a more active, central role in their own care

Whilst the UK benefits from NHS services, which for the most part are either free to patients or highly subsidised, successive governments have been looking at ways to reduce the ever-growing health and social care budget. It is within policy parameters that by 2030, the system will include financial models that incentivise individuals who avoid unnecessary costs.

As individuals assume more financial responsibility for their care, they will act more like consumers. They will require better tools to understand and manage their health.

## CITIZEN 2030

### Holistic wellness at work and home

Faiz is a 39-year-old programmer. His father struggled with high cholesterol levels and died at age 45 following a heart attack. Faiz has always tried to look after himself. Especially as he now has three kids of his own. Faiz is signed up to a local and national health incentives programme that monitors his exercise and diet through remote data collection and yearly virtual check-ups.

At work, Faiz’s employers are also participating in a healthy employer scheme that facilitates a healthy work place for their staff, encouraging non-sedentary working options. This includes flexible standing and exercise desks that enable staff to cycle and step whilst working and circular call tracks that enable staff to make phone calls via wireless headpieces whilst walking. Team meetings have also changed and virtual reality headsets enable active participation whilst taking a walk in the park.

At home, the whole family participate in a local competitive Fit Family programme that encourages residents to get out and try new sports and physical activities and awards points and prizes for both effort and improvement.

## EXPANSION OF SELF-MONITORING DEVICES AND WEARABLES

Wearable physiological monitoring devices are already ubiquitous, but they will continue to differentiate to cover a wider variety of measures.

Let’s look at asthma as an example. Today’s asthma sufferers may have peak flow meters at home to measure how well they can expel air and monitor lung capacity. But once patients know their peak flow, they often only know if it’s higher or lower than normal. It is difficult to translate that information into action steps or changes to medication regimens.

Tomorrow’s patients will have access to an integration of peak flow measurements with air-quality reports, which together feed an algorithm that continuously learns how they respond to treatment and environmental changes. Knowing this information can help asthma sufferers maximise their symptom-free time, whilst minimising their exposure to excess harmful treatments, such as steroids, through carefully computed dosing.

The ability of smartphones and other consumer gadgets to measure physiological measurements such as pulse and blood pressure is now common place. The ability to monitor blood glucose or kidney function, for example, without taking a blood sample will be widely available. Whilst intense monitoring of blood glucose in diabetics can have huge benefits in outcomes when used to modify insulin doses, the need to monitor other parameters associated with other

<sup>6</sup> <https://www.genome.gov/27565109/the-cost-of-sequencing-a-human-genome/>

conditions so regularly will need to be backed up by evidence that patients benefit.

## MULTICHANNEL EDUCATION OPPORTUNITIES, EARLY AND OFTEN

For people to be truly empowered to take responsibility for their own care, they must be educated. There is already growing evidence that gaming techniques can have cost-effective and health-improving outcomes for people of all ages.<sup>7</sup>

For example, avatar-based computer simulations can be monitored for patterns that alert clinicians when individuals with schizophrenia are not taking their medications. Other variants of computer games that reward good lifestyle choices—such as eating healthy or avoiding smoking—are valuable adjuncts to other forms of patient engagement and education. Some hospitals are already offering self-certification for certain conditions; “Knee school” helps

prepare patients waiting for knee replacement surgery.

QuitGenius<sup>8</sup> is one application that provides smokers with cognitive behavioural therapy techniques delivered via a smartphone. Once developed, tools such as this are relatively cheap to distribute. Because people carry their smartphones with them all the time, they are far more likely to interact with the app than if it were on a fixed terminal. These games not only empower individuals with tools to help them make lifestyle changes but they also provide clear visualisation of progress towards target individualised plans which enhance the positive feedback loop for further improvement.

Eventually, these educational games and apps may have real incentives for patients. Healthy eating, exercise and other choices may result in some form of credits towards the cost of health services. The growing toll of obesity, smoking and alcohol on the population is already evident. The use of educational gaming will facilitate interactive engagement from early years onwards to promote motivation for positive, sustained behavioural change. In parallel, these games can harness the power of teamwork and competition through creation of networks of players supporting each other to improve lifestyle choices.

In the future these tools will become more sophisticated, enabling players to select multiple lifestyle choices from a menu to creating a personalised app that supports improvement and tracking of several health targets simultaneously. They might include bar-code scanning of foods to monitor diet whilst also recording drugs and exercise to instantly feed into the “game” to stimulate the player to improve any behavioural aspects that need attention.

## CITIZEN 2030

### Ageing with independence

Barbara is 89 and living at home with her husband Ted. Both are keen to remain independent but Ted’s memory and mobility are worsening. Having embraced technology throughout his life, Ted now benefits from multiple apps on his watch that remind him of his daily routine, including taking medications. He wears a headset for his virtual reality physio session that helps him maintain strength in his legs and confidence on his feet.

Meanwhile Barbara suffers from Chronic Obstructive Pulmonary Disease (COPD). She managed to give up smoking with the support of a motivating virtual support team and also benefits from virtual exercise resilience classes so she can still go out for walks to the park.

They’ve decided if Ted’s mobility and dementia worsen, they will consider hiring a student carer—a university student who has received some training, lives locally and checks in daily to help with electronic communications, online ordering of groceries and appointment scheduling. In return these students receive credit for part of their tuition fees. Some student carers have received extra training in managing patients with dementia in conjunction with Admiral nurses.

Barbara and Ted are also investigating a move to a Flexi-Village that will provide multiple levels of care when the need arises. A Flexi-Village allows residents to enjoy the benefits of being central to the village with the library and local primary school closely located as well as various primary care services such as a GP, a pharmacist, social services offices and a myriad of allied health professionals.

## 3. Facilitating coordination across all care settings

Offering holistic care for people has started to blur the lines between health and social care services. By 2030, we will see more fully integrated services, as technology facilitates better communication and more efficiencies across the continuum of care.

### WORKFORCE PLANNING AND “CARE TRAFFIC CONTROL”

The need for qualified healthcare workers is quickly being outpaced by the growing needs of an ageing population. To succeed in the future, organisations must be able to prioritise the placement and flex the resourcing of this valuable skill across an increasing number of patients.

“We believe that transition to person-centric value-based models of care is one of the major transformational shifts in healthcare, where skilled staff work to the top of their licence, utilising technology to facilitate new models of care,” Dr Jenny Dean, Chief Medical Officer of NantHealth said. “One example model, that I call ‘Care Traffic Control’, enables care coordinators to remotely monitor and manage a cohort

<sup>7</sup> [https://www.healthit.gov/sites/default/files/IFTF\\_SR-1494\\_Innovations\\_in\\_Games.pdf](https://www.healthit.gov/sites/default/files/IFTF_SR-1494_Innovations_in_Games.pdf)

<sup>8</sup> [http://www3.imperial.ac.uk/newsandeventspggrp/imperialcollege/medicine/newssummary/news\\_29-9-2016-15-57-32](http://www3.imperial.ac.uk/newsandeventspggrp/imperialcollege/medicine/newssummary/news_29-9-2016-15-57-32)

of patients, each with their own dashboard of real-time integrated health and wellness information and following personalised evidence-based care pathways.”

Dashboards provide visualisation of patient needs and staff skills and availability, which helps enable optimal resource planning and management, route finding, scheduling and rostering. Algorithmic calculations and decision support underpin these functions for effective Care Traffic Control.

## HANDLE WITH CARE: SEEING PATIENTS SAFELY THROUGH TRANSITIONS

Transitions—when patients move from one care setting to another—represent a state of vulnerability. Patients need referrals to the most appropriate provider in a timely, seamless fashion so they get the level of care they need. Clinicians need to be able to access patient information from other clinicians to provide coordinated, comprehensive care.

Today, efforts by healthcare organisations to exchange patient information is complex. Securely moving information amongst different care providers, when they are using different software, is becoming easier. This progress directly impacts organisations’ ability to safely transition patients between care settings and manage episodes of care.

Patients are already accessing their own records and NHS organisations are building foundations that will simplify patients’ ability to contribute to their own record. Trusts are now deploying technology so that patients and their clinicians have readily available access to a single view of their healthcare information. Whether they’ve seen a General Practitioner, been to Accident & Emergency, visited a specialist, or spent time in the hospital—that data can and will all combine into a reliable, single patient record.

These tools facilitate patient-level care across health economies. Once anonymised, these records will also provide the first step in the collation of data to enable population-based health analytics. This in turn will inform planning of future healthcare services as well as providing rich data for medical research.

## NEW STEP-DOWN CARE AND NURSING HOME MODELS

Until science can slow the progress of neurological and muscular diseases that commonly result in increasing disability and patient dependence on care givers, we must look to new developments of hybrid care. These models will synergise technology, patient self-caring and enable less dependence on caregivers.

Various models for such change are in their infant stages today. These examples range from care communities in which residents with varying disabilities live together and take responsibility for each other to remain independent. These communities are supported by a network of professionals who work more efficiently due to the geographical proximity of their patients, the consistency of the extended care team and reliability of patients to support one another.

Another model that has been successful in the Netherlands has been the creation of “Dementia Villages,” which provide a safe environment for those with dementia to live without

## Israel network integrates clinical data for 8 million patients

The desire to aggregate patient information from disparate sources, do it quickly and present it in a way that made sense to caregivers gave rise to what is now called the Ofek Network, powered by the Allscripts dbMotion™ Solution, across Clalit Health Services. It connects multiple health systems that serve Israel’s 8.3 million residents.

The technology compiles a view-only patient record in less than 10 seconds, freeing physicians to spend more quality time with patients, saving money on unnecessary tests and procedures, as well as reducing the incidence of complication.

- +25,000 users
- +2,000 patient records viewed per month
- +15,000 pages viewed per month
- <10 seconds average response time

“Some physicians needed 10 minutes to gather the information they needed to practice good medicine, now we get the same information in seconds and presented in a way that makes sense...For us, it’s a way of life. It’s the way we practice medicine.”

*Dr Rina Yahalom, Deputy Chief Medical Officer Clalit Health Services*

the restrictions usually associated with residential homes. The citizens live in rooms decorated to be as familiar as possible for their occupants and the single entrance and exit to the large village ensures citizens can stroll freely around the spacious grounds, visit the village shop to buy their own groceries and choose to attend the large variety of activities taking place. The positive environment reassures their families by encouraging independence to the level of each village member’s ability. In addition, the supervision for citizens ensures they have access to healthy food, remain hydrated and stay active.

Many of the facilities that provide healthcare in the NHS today are old and require significant costs to maintain them. In many cases, space is under-utilised. Organisations such as Community Health Partnerships (CHP) have been working collaboratively with NHS organisations and local authorities to help design, finance and deliver modern, fit-for-purpose estates that fully integrate health and social care over the past 16 years.

Rather than building in remote locations, these developments are close to the centre of towns and at the heart of communities so residents don’t miss out on the hustle and bustle of life. Looking forward, and building on the collaborative relationships formed as part of the STP process, health economy partners are planning the next generation of new integrated facilities. These may comprise ‘Flexi-Villages’



SIR JAMES DYSON

## An innovator's view of healthcare

Sir James Dyson, industrial designer and founder of the Dyson company, is a world-famous modern inventor. Through the James Dyson Foundation, he encourages people to think differently, make mistakes and invent.

When asked what he imagined for healthcare in 2030, Sir James Dyson drew from his own experience with innovation in the sector:

*"Healthcare should be a holistic experience. Cutting-edge technology and research should be paired with sensitive architecture and design—there's a significant evidence base to show that a patient's environment has a large role to play in their recovery.*

*I supported the set-up of the Dyson Centre for Neonatal Care at Royal United Hospital Bath precisely because it embodied this holistic approach. **Every aspect of the unit was considered:** from a layout that ensures staff journeys are efficient, to using large windows throughout to ensure that babies gain an awareness of day and night as they develop. Natural light and a textured, bare wood finish creates a calming environment—for baby, parent and staff.*

*Research carried out at the Centre shows that this approach works. In the new unit, babies are sleeping 20% more than in the old unit. 90% go home breastfeeding, compared with 64% previously. Mothers and fathers are less anxious, and spend more time with their babies. **It's clear that hospital facilities must be developed with the patient's needs front of mind.**"*

that provide residents with multiple levels of residential and nursing care so that they don't have to move home as their needs increase.

As with CHP's current estate, these can be co-located with multiple community based services such as GP surgeries, pharmacies, hearing clinics and schools, libraries, leisure and arts facilities and social work hubs. These integrated health and social care developments will not only provide efficiencies through the co-location of multiple services but they have also been shown to reduce the dependency of their residents on acute health services when co-located with an Urgent Care Centre.

Dr Sue O'Connell, CEO of CHP, said: "Our latest development is in partnership with Hull Citycare as a result of the work delivered by the Humber, Coast and Vale Sustainability Transformation Plan. This £9m integrated health and social care facility is designed to meet the growing needs of the frail, elderly population in Hull and I'm delighted that the first brick was laid this week."

Technological innovation will further supplement these communities in the future. For example, new devices will enable immobile individuals to get in and out of bed and chairs without the aid of caregivers through adapted furniture, hoists and robotic arms. There is good evidence that caring for patients in well-designed environments can speed return to health for the patient and a better environment for healthcare providers and carers. (see side bar: *An innovator's view of healthcare*).

## Conclusion

Health and care delivery will be very different in 2030 from what we experience today—perhaps a much bigger change than anything we have seen before in a single generation. There are a number of drivers for this—the population profile, workforce skills and roles, digital technologies and big data and drugs and devices. They will drive a significant realignment of how health and care is delivered and, as a consequence, have major implications for delivery structures, estates, funding, skills and how the services are led. Imagining 2030 also critically needs an urgent and open conversation with the public about their expectations, their own interactions with health and care services and how moving towards better health outcomes for all requires change from all stakeholders.

2030 is less than 13 years away. We as individuals must take responsibility for our health and embrace healthcare education and technology that will enable finite healthcare resource to continue to support our growing needs as our population grows and ages and polymorbidity becomes more frequent.



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