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The future unmasked

Predicting the future of healthcare and life sciences in 2025

Prediction Nine

Healthcare and life sciences companies have prioritised decarbonisation

Deloitte Centre *for* Health Solutions

Foreword

Welcome to our ninth prediction, *Healthcare and life sciences companies have prioritised decarbonisation*, from our report *The future unmasked: Predicting the future of healthcare and life sciences in 2025*. This is the ninth 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 ninth prediction considers what the world in 2025 looks like as healthcare and life science organisations adopt more sustainable environmental, development goals and bring forward their 'carbon net zero' goals.

The COVID-19 pandemic has demonstrated the inextricable relationship between health and the environment. Many healthcare and life sciences organisations have had to transform their operating models almost overnight, including ways of engaging with clinicians and patients. During the pandemic, healthcare and life sciences companies have seen an acceleration in digitalisation including virtual consultations and virtual clinical trials potentially delivering longer-term reductions in carbon emissions. Conversely, other responses to the pandemic such as an increase in cold-chain transportation as well as increased demand for single-use technology and personal protective equipment could undermine their decarbonisation goals. While the pandemic has not changed the fundamentals of the climate crisis it has helped galvanise global action, at government and organisational level, with some healthcare systems and global life sciences companies bringing forward their carbon net zero targets.

In 2025, all healthcare and life science organisations have adopted mitigation strategies to reduce their carbon footprint and implementing carbon neutral solutions such as using renewable clean energy and sustainably sourced materials across their clinical development and supply chain functions. Likewise, healthcare organisations prioritise suppliers that have zero-carbon landfill policies and recycle water and waste. They are also reducing demand through preventive care, choosing supplies and equipment with lower carbon footprints, and reducing travel through increased telemedicine availability.

Our ninth prediction is brought to life through a series of portraits imagining 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 last prediction in our series.

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Healthcare and life sciences companies have prioritised decarbonisation

Organisations are focused on being sustainable and responsible businesses

Prediction: In 2025, healthcare and life science organisations have adopted mitigation strategies to reduce their carbon footprint and improve sustainability by improving waste management and water usage, adopting renewable energy, greener procurement policies and adapting low-carbon transport delivery systems. Resilient pharma companies have implemented these and other carbon neutral solutions across their clinical development and supply chain functions. Digital transformation is improving carbon efficiency such as RPA and virtual clinical trials. Organisations prioritise suppliers that have zero-carbon landfill policies, recycle waste and water, and use sustainable materials in packaging and parts. Healthcare providers have also switched from disposable to reusable instruments wherever possible, reducing use of landfill sites and transportation costs (for example, 'near-shoring'), ultimately saving costs whilst improving sustainability. Payers are seeking evidence that suppliers are becoming carbon neutral, choosing medical supplies and equipment with low carbon footprints. Providers have reduced patient journeys through the shift to virtual models and widespread use of remote monitoring and electronic prescriptions.

The world in 2025

- Healthcare and life sciences organisations are phasing out their use of fossil fuels and have reduced their carbon footprints by switching to renewable 'green' energy. Natural gas needs are replaced by bio-gas.
- Pharma companies have adopted the principles of circularity (reduce, reuse, recycle) by developing closed-loop product life cycles and reducing the use of raw materials and associated emissions.
- Most pharma companies have amended their packaging, using 100% recyclable, reusable or compostable clear plastic packaging and certified recycled paper and pulp-based packaging.
- Healthcare organisations have increased 'out-of-hospital' care and focus on prevention and population health. Digital-first primary and outpatient care are reducing travel and protecting local communities from emissions and pollutants.
- Switching from disposable to reusable instruments wherever possible has improved hospital handling and transportation costs, reduced use of landfill sites, saving costs and improving sustainability. Healthcare procurement teams consider sustainable goals when purchasing medicines and medical equipment and prioritise companies with shared values.
- Life sciences and healthcare organisations have developed a system level set of common metrics and disclosures, including independent audits to engender confidence and trust in their progress towards sustainable environmental goals.
- New reimbursement schemes for zero emission inhalers, anaesthetic gases and 3D printed products, broaden access to affordable, quality products.

Conquered constraints

- **Skills and talent:** Life sciences and healthcare staff are upskilled to drive and implement sustainable actions across the health ecosystem. Companies whose leaders champion sustainability goals have had the most success in reducing their carbon footprint. Training on climate change, health and sustainability has been introduced across all staff training courses.
- **Funding:** Most countries have established a 'Green Bank' prioritising industry investment in infrastructure projects that deliver net zero goals, including carbon capture and storage, waste management, 'building decarbonisation' digitalisation and green transportation systems. Private investors prioritise companies that openly report their progress towards environmental sustainability goals.
- **Regulations:** Regulatory standards have been introduced on measuring and reporting carbon emissions across the health ecosystem with regulators evaluating progress on a regular basis. Organisations track their emissions and disclose their results annually. 'Eco-labelling' of products and supplies with details of their carbon footprints has also been introduced to inform consumer choice and drive industry practices.
- **Data and interoperability:** Stakeholders across the health ecosystem have developed a set of new decarbonisation targets based on agreed data-reporting standards and metrics. A new global predictive simulation model is used to forecast the impact of different carbon reduction strategies on each company's carbon footprint and the extent to which their environmental sustainability goals are being met. Sustainability indicators are audited and reported nationally against aligned industry goals of a net zero impact on climate.

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

Imagine the world in 2025

Smart hospital infrastructures creating 'greener' sustainable environments

In 2021, in response to a government mandate, Jupiter Hospital Trust, a new four-hospital building project, appointed Nick Weber to the board as Head of Sustainability. Nick has been working with the executive team for four years to embed climate-smart features in the design of hospital operations and real estate. Energy for the hospital buildings is obtained from an energy efficiency and conservation scheme, using clean renewable energy. The hospitals use various forms of renewable energy: solar, wind, geothermal, biomass, landfill gas and anaerobic digestion. The buildings contain water recycling plants and have extensive garden areas and bio-diverse external spaces. Nick introduced procurement policies to ensure that the hospital reduces its use of single-use plastic, and instead uses bioplastic and biodegradable packaging. The hospital has also reduced its reliance on single-use equipment, and where possible buys only mercury-free and sustainable medical devices. A key initiative by Nick in 2021 was to work with clinicians to shift all non-essential physical services to virtual healthcare models, reducing resource waste. Patients, physical products and services are now connected via cloud-based digital offerings. The hospital's food supply comes from local distributors that have zero landfill policies and the hospital's ambulance fleet consists of electric vehicles powered by rechargeable lithium batteries. Jupiter was certified as carbon neutral in April 2025.

How pharma companies have developed new strategies to minimise waste

Anna works as the Digital Strategy Lead for a forward-thinking pharma company. She has been tasked with developing a strategy to digitise workflows and audit trails to provide transparency over the sustainability of the supply chain. The company aims to achieve carbon neutrality. Anna's strategy is to implement AI-powered supply chain and manufacturing functions, with performance monitored through interconnected equipment units that continually provide data and analytics. There is also greater oversight through real-time inventory management, or monitoring of processes to prevent, reduce or recycle waste, or ensure safe disposal. A closed-loop manufacturing system is implemented to convert waste into energy and to avoid wastage of materials that can be reused or sold. Anna reports waste data on a quarterly basis, and contractors are routinely audited to ensure compliance with waste management standards. Gainsford Pharma chooses to commit to longer term relationships with a selection of critical suppliers, who in turn invest in new technology to deliver exceptionally recyclable products. The company has established metrics and targets for waste: for example, 85% of all non-hazardous waste and 70% of all hazardous waste should be reused or recycled. It has also committed to longer term relationships with a selection of critical suppliers, that have invested in technology to deliver exceptionally recyclable products. the company also use sustainable design principles and to eliminate the use of polyvinyl chloride (PVC) in packaging. Digital twins are used to predict which products can be reused and which should be disposed of, and how. Hospital procurement teams support recycling schemes by returning products or packaging to the pharma company that supplied them, for reuse in the supply chain.

Collaboration between a healthcare organisation and pharmaceutical company to reduce carbon emissions from transportation

Verde Pharma and Seacole Hospital Trust have collaborated to reduce emissions from transportation. This remodelling of logistics arrangements aims to reduce emissions by reducing distances travelled by vehicles. They use zero-emission lorries to transport pharmaceutical products and medical devices from the hospital's local distribution centre. By centralising operations they have introduced multiple-stop deliveries; and via a digital command platform, Verde Pharma and Seacole Hospital Trust track the multi-stop deliveries and monitor polluting emissions. Data analytics show how operating facilities might be relocated to reduce distances travelled. Pathways are remodelled through the use of a digital twin for the supply chain, which uses machine learning to enhance in real time the accuracy, speed and efficiency of responses to the procurement needs of the hospitals.

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

Evidence in 2020

Johnson & Johnson Consumer Health (J&JCH) Healthy Lives Mission

J&JCH is investing $800 million over the next ten years to improve the health of people and the planet. It expects to provide transparency for all the ingredients used in its brands, inform consumer choice, and to use 100% recyclable, reusable or compostable plastic packaging and certified/post-consumer recycled paper- and pulp-based packaging by 2025. Other initiatives include removing pumps from products, and making disposable wipes made from plant-based, home-compostable fibres and bottles made with at least 30% recycled material and recycled plastic in its packaging. It also aims to source and process natural ingredients in an environmentally responsible manner.[101]

US hospitals and health systems sign up to Practice Greenhealth and Global Green and Healthy Hospitals, a global network committed to sustainable operations

Across the US healthcare sector, more than 43,000 hospitals and health systems are part of a global network, Practice Greenhealth and Global Green and Healthy Hospitals that is committed to sustainable operations. Practice Greenhealth is a healthcare membership organisation that provides sustainability solutions to benefit patients, health and care workers, communities and the environment. Member hospitals aim to minimise their own environmental impact and encourage suppliers to do the same through sustainable procurement policies. Practice Greenhealth operates an annual Top 25 Environmental Excellence Awards system, and all award winners are seen as leaders in the US in addressing the links between the environment and human health. From serving less meat to reducing toxic chemicals to installing life-saving renewable energy sources, these hospitals demonstrate leadership and performance that set an example for others in the health sector to follow.[102]

Automedi device aims to make NHS supply chain more sustainable

Automedi has created an intelligent, on-site machine that makes and assembles healthcare equipment at the point-of-care. Automedi's on-site 'FabLab' combines 3D printing, a live catalogue, and a user interface with fleet support, all consumables and software and hardware upgrades into a simple managed service. The 'FabLab' device enables healthcare organisations to reduce delivery emissions, produce equipment faster and minimise equipment shortages.[103] Fleet support is available through the Automedi service, where users can access a cloud-based fleet management platform, supported by a management team that responds to calls from devices, delivers consumables and hardware upgrades, and recycles surplus material.[104] The Axelisys team plans to extend the Automedi device fleet to the entire Greater Manchester Health and Social Care network. A UK-wide alternative supply chain will be launched early in 2021.[105]

Pharma companies develop next-generation inhalers to reduce carbon emissions

Respimat®, Boehringer Ingelheim's propellant-free soft mist inhaler has carbon emissions approximately 20 times lower than that of an ipratropium pressured metered dose inhaler (pMDI). A recently-developed reusable model has the potential to reduce emissions by an additional 71%, when used with six cartridges.[106]

AstraZeneca expects the propellant used in the next generation pressurised metered-dose inhalers (pMDI) to have a GWP that is 90-99% lower than propellants used in older pMDIs.[107]

Novo Nordisk is the first global company to have assessed its performance against the Future-Fit Business Benchmark, and have the results independently assured

Novo Nordisk used the Future-Fit Progress Indicators to define real progress, identifying its strengths and weaknesses and thus the areas where improvement was needed e.g. before the assessment the company didn't know that 7% its water use is occurring in water-stressed area; now it can work with local experts to reduce the footprint.[108] Novo Nordisk has also announced targets to ensure all its direct suppliers supply the company based on 100% renewable power by 2030. Novo Nordisk will work with all existing and new suppliers to meet the target. The commitment is the next step in Novo Nordisk's 'Circular for Zero' environmental strategy.[109]

Kaiser Permanente reaches a carbon neutral health system

In September, Kaiser Permanente became the first health system in the US to achieve carbon neutrality by making its buildings more energy- efficient, investing in sustainable business practices and purchasing carbon offsets. The milestone was certified in accordance with The Carbon Neutral Protocol. The company improved energy efficiency in its buildings, installing on-site solar power and making long-term purchases of new renewable energy. In 2018, it reached a power purchase agreement to acquire enough clean energy to power 27 of its 39 hospitals. The agreement helped establish new solar and wind farms and one of the largest battery energy storage facilities in the US. The health system also targeted reductions in waste and water use, and 100% sustainable or local food consumption. Kaiser Permanente said it plans to address its supply chain in future projects aimed at reducing emissions.[110,111]

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

The COVID-19 impact

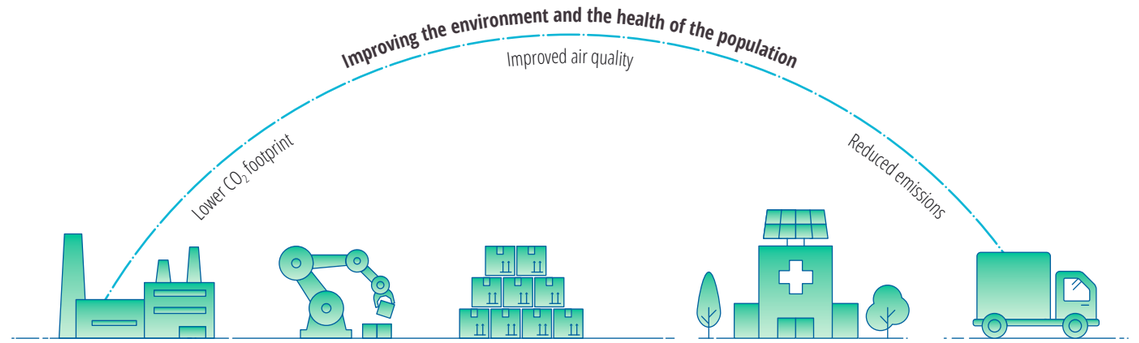
Deloitte view on the impact of COVID-19

The COVID-19 pandemic has demonstrated quite clearly the interrelationship between health and the environment. During the pandemic many healthcare and life sciences organisations have had to transform their operating models almost overnight and seen an acceleration in digitalisation across their supply chains. They have also had to adopt new ways of engaging with clinicians and patients, including virtual consultations and virtual clinical trials which, in reducing the need to travel, have the potential to deliver long-term reductions in carbon emissions. Conversely, other responses to the pandemic such as an increased need for cold-chain transportation and demand for single-use technology and personal protective equipment (PPE) could undermine decarbonisation goals. Nevertheless, health stakeholders continue to acknowledge their responsibility to take action in response to the threat to health from climate change. Moreover, although the pandemic has not changed the fundamentals of the climate crisis it has helped galvanise global action, at government and organisational level, with some healthcare systems and large global life sciences companies adopting more ambitious sustainable, decarbonisation goals.

Reducing the environmental impact of PPE in the UK

During the first wave of COVID-19, the global demand for PPE rose to unprecedented levels, putting a huge strain on supply chains. The NHS procured exceptionally large volumes of PPE to maintain service delivery and sustain high quality care. However, there were growing concerns about the environmental impact due to increases in the demand for single-use items, which are made predominately from plastics. Work is already underway in the NHS to reduce the environmental impact of PPE. A part of the UK Make initiative is for the UK to establish domestic PPE manufacturing, and to develop a resilient supply chain with high quality, innovative and environmentally-friendly products for end users. Examples of this are measures to procure made-for-reuse PPE items, including masks and gowns.[112]

Healthcare and life sciences companies are focused on being sustainable and responsible businesses



Source: Deloitte analysis

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Endnotes

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