Health Foundation long read (PDF version)

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Net zero care: what will it take?

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Contents

Key points

- Climate change is the leading threat to global health. The NHS, which is responsible for around 4% of England's total carbon footprint and 40% of public sector emissions, has an important role in mitigating as well as adapting to the impacts of climate change.
- The NHS in England has set targets to reach net zero by 2040 for direct emissions and 2045 for emissions it influences, and launched the Greener NHS programme to help reach them. Achieving these targets will require concerted action across areas, including estates, energy and supply chains. This long read focuses on the critical role of care delivery in achieving a net zero NHS because it contributes both directly and indirectly to greenhouse gas emissions.
- Improving the environmental sustainability of care delivery can bring financial savings and improvements to patient experience, reinforcing the case for action. We outline key ways NHS health care providers can decarbonise care that are consistent with existing priorities. These include preventing disease, improving the management of disease and health, moving care out of hospitals, eliminating avoidable waste, avoiding unnecessary interventions and using lower-carbon alternatives.
- Our research highlights four main areas for action to support the shift to net zero care:
    1. The NHS should support staff to build the skills, knowledge and dedicated time to design and implement the necessary changes to care delivery.
    2. NHS leaders should prioritise environmental sustainability, link it to other priorities and encourage working across organisational boundaries.
    3. National bodies should align their focus on NHS net zero and ensure that national policy levers and guidelines support this.
    4. Research and innovation are needed to identify the most carbon-intensive aspects of care and develop lower-carbon solutions, building the evidence on which existing solutions should be prioritised for wider adoption.

1. Introduction

Climate change is the leading threat to health globally, and the most vulnerable populations will be most adversely impacted. With the NHS responsible for around 4% of England's total carbon footprint and 40% of public sector emissions, it has an important role in mitigating as well as adapting to the impacts of climate change. In 2020, the NHS in England set targets to reach net zero by 2040 for the emissions it directly controls and by 2045 for the emissions it can influence, and launched the Greener NHS programme to help achieve these targets. An NHS net zero goal is now cemented in legislation through the Health and Care Act 2022 and has the support of both the public and NHS staff.

Achieving net zero will require action on many fronts, such as the NHS estate, energy use and supply chains. This long read focuses on the critical role of care delivery in achieving a net zero NHS, an area we will be supporting through future work at the Health Foundation. All care has an indirect bearing on emissions through the way it is delivered. But some care delivery contributes directly to emissions, such as the potent greenhouse gases used in some asthma inhalers and anaesthetics. Care can be more or less environmentally sustainable depending on how it uses resources and shapes the demand for key elements of the NHS's carbon footprint, including medications, medical devices and equipment, building use, energy and patient and staff travel.

This long read was informed by real world case studies and relevant literature, as well as conversations with over 50 people working on environmental sustainability across the health and care system in 2022–23. These conversations informed our own understanding of low-carbon care and focused on existing efforts to decarbonise the NHS, enablers and barriers to achieving NHS net zero and future priority areas for action. The stakeholders and organisations we engaged with are listed in Box 2.

In this long read, we provide an overview of the features of low-carbon care delivery and highlight examples of where it is already happening. We then outline areas where policymakers and system leaders should focus to achieve the shift to more sustainable care.

Box 1: Defining carbon dioxide equivalent (CO2e)

Throughout this long read, we use 'net zero care', 'lower-carbon care' and 'decarbonising care' to refer to efforts to reduce the emission of both carbon dioxide and other greenhouse gases. We account for this by referring to the carbon dioxide equivalent (CO_2e) of different activities. CO_2e is defined by Eurostat as 'a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential'. The use of this measure enables comparison of interventions that target different greenhouse gases. A more detailed explanation of this principle, together with an example of how CO_2e is calculated, can be found in this article from Ecometrica.

2. What is net zero care?

All care uses resources and contributes to emissions. Achieving net zero care will mean reducing demand for resource-intensive care, minimising emissions from care delivery and, eventually, offsetting what is left. While we may not know precisely what a net zero health care will look like, and do not yet know the comprehensive carbon footprint for all aspects of care, there is some consensus on the principles of how to make care more sustainable. We outline these below, adapting a framework developed by the Centre for Sustainable Healthcare.

Preventing disease

Actions to prevent disease where possible can reduce the need for more intensive health care – and its accompanying carbon footprint – altogether. For example, behavioural smoking cessation services have very small carbon footprints compared to the management of smoking-related illness. Similarly, one seasonal influenza vaccination has an estimated carbon footprint over 14 times smaller than the treatment of one case of influenza. Action to support healthy lifestyles and prevent disease will play a key role in this agenda by reducing the need for health and care services associated with the treatment of illness. This will require action on the part of local authorities as well as the NHS. Integrated care systems (ICSs) provide an opportunity not only to improve population health by improving prevention but also to support net zero goals.

Improving the management of disease and health

Better disease and health management can reduce the need for more carbon-intensive forms of care. For example, the Sentinel Project in Hull and East Yorkshire, which included a focus on educating people with asthma and supporting the optimal use of inhalers, has prevented an estimated 44,275 'reliever' inhalers being issued, equivalent to a saving of 1,240 tonnes CO_2e. Improving diagnostic testing can also help here. For example, an environmental assessment of testing for placental growth factor in pregnant women – a simple blood test that can be used to rule out pre-eclampsia and therefore identify women who do not require hospital admission – at Oxford University Hospitals revealed that, compared with the traditional care pathway for pre-eclampsia, this saved an estimated 386 hospital admissions and 35 tonnes CO_2e per year. The assessment estimated that, extrapolated across England, the equivalent saving would be 1,150 tonnes CO_2e per year, accompanied by a financial saving of £4m.

Moving care out of hospitals

Acute care accounts for a majority of the NHS's overall carbon footprint. Moving care out of hospitals where appropriate – and thus reducing emissions from patient travel, among other benefits – could make a pivotal contribution to achieving net zero. By delivering consultations and treatment services from community hubs rather than hospitals, Manchester University NHS Foundation Trust halved CO2e emissions from patient travel for specialist macular eye treatment, simultaneously improving accessibility. By facilitating earlier discharge, an occupational therapy scheme at University Hospital of Wales saved an estimated 15,600 bed days – nearly £1m and over 573 tonnes CO_2e in one year. Delivering hospital care in a home setting can also bring carbon savings. For example, an evaluation found that the use of a virtual ward

to manage 310 COVID-19 patients at University Hospitals of Leicester NHS Trust led to estimated savings of 1,100 bed days, £530,000 and 138 tonnes CO_2e.

Eliminating avoidable waste and unnecessary interventions

Eliminating avoidable waste is important because of the emissions associated with the production, use and disposal of equipment and products. For example, a recent review identified quality improvement interventions in surgery with the potential to improve both environmental and financial sustainability. Great Ormond Street Hospital NHS Foundation Trust's celebrated 'The gloves are off' campaign led to the use of 36,600 fewer disposable gloves every week. Key to this success was the role the Lead Nurse for Infection Prevention and Control and Lead Practice Educators played in engaging colleagues, including through developing an awareness and education campaign. Other providers are now taking steps to replicate this campaign. Avoiding unnecessary interventions can also make an important contribution, in keeping with the Choosing Wisely approach, which aims to avoid interventions that do not benefit patients. By developing decision-making tools, using prompts and engaging nursing and phlebotomy staff, Charing Cross Hospital achieved a 25% decrease in cannulation during emergency attendances in one year. This equated to a reduction in the percentage of cannulae that go unused from 40% to 27%, financial savings of £95,000 and a carbon reduction of 19 tonnes CO_2e.

Using lower-carbon alternatives

Lower-carbon alternatives can be sought for unpreventable care with a high carbon footprint. University Hospitals Bristol NHS Foundation Trust saved 360 tonnes CO_2e per year using alternatives to the highly polluting anaesthetic gas desflurane. Recognising the high carbon footprint of endoscopy, the British Society of Gastroenterology and partners recently recommended that 'sustainable alternatives to conventional diagnostic endoscopy should be considered in all patients where clinically indicated', including options such as colon capsule endoscopy.

3. What's needed to transition to net zero care?

Low-carbon care is consistent with existing health system priorities, such as increasing prevention, moving care out of hospital, improving efficiency and harnessing technology. It is important to recognise and support these synergies where they exist. But progress in these areas is often slow, and net zero care will not simply be delivered as a by-product of existing actions. It will require dedicated effort.

From our research and conversations with people working on sustainable health care, we identified four main areas for action that leaders and policymakers should focus on now to enable the shift to net zero care.

Invest resources to shift to low-carbon care models

Generating capacity

Decarbonising care, as with other forms of improvement, will require dedicated time and resources for staff at all levels. The current reliance on volunteerism to progress net zero action is unsustainable and insufficient. Some organisations are leading the way. Newcastle Hospitals NHS Foundation Trust has employed junior doctors in paediatrics, oncology and anaesthetics with half or more of their time dedicated to quality improvement related to environmental sustainability. South-East London ICS has committed to identifying, educating and resourcing clinical staff to work on sustainability in primary care. And some ICSs in England are appointing dedicated clinical fellows as part of the Chief Sustainability Officer's Clinical Fellow Scheme.

Building capability

Clinical staff also require knowledge and skills to identify how environmental sustainability relates to their practice, what changes they can make and how best to implement them. There is much more to do to raise awareness: 2022 Health Foundation polling found that awareness of the net zero ambition among NHS staff was still relatively low at 48%. Environmental sustainability needs to be embedded consistently across professional groups through undergraduate and workplace education and training. Work should be done to build on positive moves such as the UK-wide curriculum for environmental sustainability in undergraduate medical education endorsed by the Medical Schools Council.

Building on the concept of sustainability in quality improvement, environmental sustainability should be normalised within thinking about the quality of care, with an expectation that it be integrated into all quality improvement and service-change efforts as well as professional development and clinical guidance. As hospital trusts and systems develop improvement approaches aligned to national models, such as the NHS Impact approach, there is a clear opportunity to integrate a strong focus on environmental sustainability into wider efforts to improve the quality of care. Strengthening the understanding and deployment of quality-improvement approaches will be important in enabling the shift to low-carbon care.

There are key capabilities clinical staff need to deliver more sustainable care. These include carbon mapping the care pathway or service and identifying opportunities for change; co-producing more sustainable approaches to care with patients; implementing these approaches, including seeking guidance and support from sustainability teams and leads; testing and measuring the impact of changes; and sharing approaches and materials across teams and organisations.

Put sustainability at the core of good leadership

Net zero care will only be delivered if organisational leaders place environmental sustainability at the forefront of decision making. This includes clinical leaders, who are in a strong position to design and lead changes to the services they deliver and play a pivotal role in educating and influencing others. Prioritising sustainability, unlocking resources and investing staff time and training in decarbonising care all rest with leaders.

There are many challenges competing for leaders' attention. The net zero goal must be integrated and balanced with other long-term priorities, such as boosting efficiency, achieving financial sustainability, reducing waiting times, enhancing out-of-hospital care, delivering digital transformation and improving the safety and quality of care through implementation of the new national improvement strategy, NHS Impact. Moreover, these priorities are often aligned and face common strategic and operational challenges – offering opportunities for synergy and mutual reinforcement. For example, by delivering 485,000 outpatient appointments (40% of all appointments) virtually, University College London Hospitals saved over 13 million miles of patient travel and 1,300 tonnes CO_2e during 1 year.

Decarbonising care also requires leaders to break out of organisational silos and come together across local health systems. In England, all 42 ICSs have developed green plans that set out strategic approaches to net zero. However, these vary widely in detail and quality and can lack clear implementation plans. Within an ICS, every integrated care board (ICB) is required to have a board-level lead who delivers on the green plan and net zero goals. Differences in the extent to which ICBs have appointed dedicated sustainability leads and individuals with clinical experience are likely to drive variations in how ICBs approach the decarbonisation of care. Further, while a coherent system-wide approach should offer an opportunity to pool the resources and expertise of organisations and avoid duplication, many ICSs lack the shared infrastructure and resources required, and the maturity of environmental sustainability partnerships is variable.

Awareness-raising and capability-building is needed to equip senior leaders with the skills and knowledge to lead in alignment with the NHS's net zero ambitions. Leaders also require an understanding of the practical measures that can improve the environmental sustainability of care. To meet these needs, leadership training should be delivered at a larger scale, building on programmes developed by the Centre for Sustainable Healthcare and NHS Leadership Academy. Practical support should be given to integrate environmental sustainability within strategy development and decision making, and also focus on bringing leaders together to support collaboration across systems.

Ensure major policy levers are used to drive progress

Care delivery is shaped by a vast array of nationally directed conditions, guidelines and incentives placed on leaders, managers and staff. However, the major approaches used to manage and improve services, deliver national priorities and safeguard quality – such as payment systems, performance targets, regulation of NHS organisations and approval systems for new medicines and technologies – were not designed with net zero in mind.

In recent years, there has been some progress prioritising sustainability within national policies. NHS England has introduced a range of environmental sustainability targets and reporting requirements for NHS organisations. The Care Quality Commission now considers environmental sustainability part of its single assessment framework of health and care providers. In 2021, the Investment and Impact Fund incentivised primary care networks to switch to prescribing lower-carbon inhalers as part of a suite of incentivised targets (though this incentive was short lived and has been removed under the latest primary care plans). Additionally, the National Institute for Health and Care Excellence published a decision aid to support patients and clinicians switching to lower-carbon inhalers, though it has yet to replicate this approach in other relevant areas of clinical practice.

But these developments constitute just a tiny portion of the targets, policies, guidelines and payment systems that influence care delivery. Current national policy will help or hinder progress on the net zero goal in ways that are not yet well understood. To inform more supportive policy, the role of national levers in achieving NHS net zero must be reassessed.

Support research and innovation to enable faster decarbonisation of care

Service changes and care pathway transformation

Evidence is crucial for both policy and practice on sustainability. But there are inherent challenges in building the evidence base due to difficulties measuring the environmental impact of products and pathways and the lack of a standardised measurement and reporting approach. Reducing the environmental impact of care requires understanding the current carbon footprint of services, what changes could be made and what the impact will be on other aspects of care.

We now have a good overall picture of carbon emissions by health care setting and what some of the biggest contributors are. There is work underway – including by NHS England, the Centre for Sustainable Healthcare, and the Sustainable Healthcare Coalition – to explore specific specialities and care pathways, such as eye care, surgery and kidney care, to demonstrate how carbon hotspots can be identified and changes targeted. What is less clear is what care pathways, medicines and devices should be prioritised next or how to make the changes required, highlighting the importance of funding more research into sustainable health care. A new UKRI funding programme, which includes a focus on lower carbon care models, may help here, but further attention and work will be needed.

Service changes and care pathway transformation

Innovation also has an important role to play in enabling the transition to lower-carbon care. Several initiatives have already been launched to test and demonstrate new sustainable innovations. For instance, SBRI Healthcare are running a competition to support small and medium-sized enterprises to develop innovations that align with the NHS Suppliers Roadmap and generate carbon reductions in care. Further support for innovation can help things move faster. Given that many innovations only have been implemented on a local level, there is a particular need to identify what innovations should be prioritised for adoption elsewhere and support their spread. New innovative methods of evaluation are also needed, along with a process of consensus-building around acceptable thresholds for evidence standards in this context.

4. Conclusion

This long read has examined four priority areas for action to deliver more environmentally sustainable care:

1. **Workforce skills and knowledge in low-carbon care**

    - Leaders of NHS provider organisations and ICSs must ensure health care workers have the time and resources needed to improve the environmental sustainability of care delivery. This should make use of existing efforts to build improvement capability, in line with the national improvement strategy, NHS Impact, where possible.

    - Those responsible for building workforce capability at the national, regional and local levels should ensure that environmental sustainability is embedded into training, professional development and guidance for all health care workers. This is reliant on coordination and partnership between organisations such as NHS England, professional membership bodies, regulators setting educational standards for health care staff, higher education institutions, NHS provider organisations and ICSs.

2. **Effective leadership**

    - Support and training should be made available for leaders at all levels – in particular, leaders of health care provider organisations and ICSs, as well as their respective board members – to enable their understanding of why and how they should support net zero care within their organisations and systems.

3. **Supportive policy levers**

    - National policymakers should assess how existing national policy and the oversight and regulation of the health care system are helping or hindering the decarbonisation of care. Alignment across national bodies should be ensured and environmental sustainability integrated into wider efforts to improve the quality of care, including through NHS Impact.

4. **Research and innovation**

    - NHS England, as well as research funders such as UK Research and Innovation and the National Institute for Health and Care Research, should commission further research to identify and characterise key carbon hotspots across different areas of care and identify novel and existing solutions to address these.

    - They should also commission the research required to develop agreed approaches to the measurement, reporting and evaluation of environmental sustainability in care delivery.

Delivering net zero care will not be easy. There are promising opportunities to improve the environmental sustainability of care alongside addressing other health care priorities, bringing multiple benefits for both patients and health and care services. But as the climate emergency becomes increasingly serious, health care policymakers and leaders must act quickly and decisively.

Box 2: Stakeholder conversations

We spoke with stakeholders from national bodies, including health care membership bodies, charities, think tanks, research funders and academia and health and care systems as well as individual health and care providers. We approached individuals and organisations for discussions based on a combination of prior stakeholder mapping, existing contacts and snowball sampling.

Organisations we engaged with included:

- Academic Health Science Networks
- Arup
- Association of British HealthTech Industries
- Brighton and Sussex Medical School
- Care England
- Care Quality Commission
- Centre for Sustainable Healthcare
- Climate Exchange
- Greener Practice CIC
- Institute of Health and Social Care Management
- Integrated Care Systems, including:
    - NHS Greater Manchester ICB
    - North East and North Cumbria ICS
    - South East London ICS
- King's Fund
- Nuffield Trust
- Local Partnerships

- National Institute for Health and Care Excellence
- National Institute for Health and Care Research
- NHS Confederation
- NHS England
- NHS Property Services
- NHS health and care providers, including:
    - Cambridge University Hospitals NHS Foundation Trust
    - Imperial College Healthcare NHS Trust
    - Manchester University NHS Foundation Trust
    - Newcastle Upon Tyne Hospitals NHS Foundation Trust
    - Sussex Community NHS Foundation Trust
    - University College London Hospitals NHS Foundation Trust
- Scottish Care
- Shelford Group
- Sustainable Healthcare Coalition
- Tech UK
- UK Health Alliance on Climate Change
- University of Cambridge
- University of Sterling

The views expressed in this long read are those of the authors alone.

5. Supporting information

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