Keywords Climate crisis/Sustainability/Public health/Service improvement

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In this article...

- How the climate crisis affects public health and how health professionals can help
- Why it is important for nurses to consider sustainable ways of working
- How clinical teams introduced greener ways of working to their services

Greening the NHS 2: using the Green Team Competition to effect change

Key points

Because healthcare contributes substantially to carbon dioxide emissions, health professionals can help address the climate crisis

A trust ran a Green Team Competition to encourage sustainable changes to working practice

Shortlisted teams' initiatives generated carbon efficiencies, cost savings and benefits for patients

The competition format provided an opportunity to celebrate the achievements

Nurses and healthcare leaders have a responsibility and an opportunity to implement the principles of sustainable healthcare

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Abstract The climate crisis presents a global health threat, affecting millions of lives. Carbon dioxide emissions from healthcare are substantial, but health professionals can play a vital role in addressing the climate crisis. To encourage greener ways of working, a trust implemented the Centre for Sustainable Healthcare's Green Team Competition. The five shortlisted teams proposed projects to improve efficiency and sustainability, leading to considerable estimated savings in financial costs and carbon emissions. This is the second article in a series on what nurses can do to address the climate crisis.

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The climate crisis is a health emergency, presenting one of the greatest global health threats of our time. The World Health Organization (WHO) (2021a) warned that climate change is negatively affecting many determinants of health, such as livelihoods, equality, and access to health and social care; these risks most affect vulnerable and disadvantaged people. The Intergovernmental Panel on Climate Change (IPCC) reported that limiting global warming to 1.5°C above pre-industrial levels will greatly reduce the probability of sustained public health catastrophes. However, to achieve this, global carbon dioxide (CO_2) emissions must fall by ~45% of their 2010 levels by 2030 and to net zero by 2050 (IPCC, 2018).

This article – the second in a series on how nurses can help address the climate crisis – discusses a competition implemented by a trust to make its services more environmentally friendly and improve sustainability and efficiency.

Role of health professionals

Carbon emissions contribute to both climate change and poor health. Reducing the carbon footprint of the healthcare sector will, therefore, help mitigate the climate crisis and improve people's health globally (Smith, 2022). By engaging with net-zero targets and eliminating waste and inefficiences, health workers can:

- Save the NHS money;
- Help reduce the consequences of the climate crisis;
- Promote public health (IPCC, 2018).

Although health professionals can play a vital role in addressing the climate crisis, Kotcher et al (2021) reported that few appear willing to do so. Their survey revealed that health professionals understand the climate crisis is happening, know it poses a growing health concern and feel a responsibilty to educate people about the problem. However, many cited a range of barriers that prevented them from doing so, with time constraints being the most commonly reported (Kotcher et al, 2021).

Although the climate crisis poses a serious threat, it also brings about the "greatest opportunity to redefine the social and environmental determinants of health" (Office for Health Improvement and Disparities, 2022). Following the 2021

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United Nations Climate Change Conference, 50 countries committed to developing "climate-resilient and low-carbon health systems [...] in response to growing evidence of the impact of climate change on people's health" (WHO, 2021b).

In the UK, health professionals are increasingly being encouraged by programmes – such as NHS England's Greener NHS – to be prepared for, and respond to, the climate crisis and reduce its impact. Organisations such as the Centre for Sustainable Healthcare (CSH) exist to facilitate this, by supporting staff to make positive changes and consider greener ways of delivering care.

Green Team Competition

The Green Team Competition is a leadership and quality improvement programme promoted by the CSH, which provides a framework for sustainable methods of healthcare delivery, guided by four key principles (Fig 1).

The competition is for NHS trusts that want to transform service delivery by:

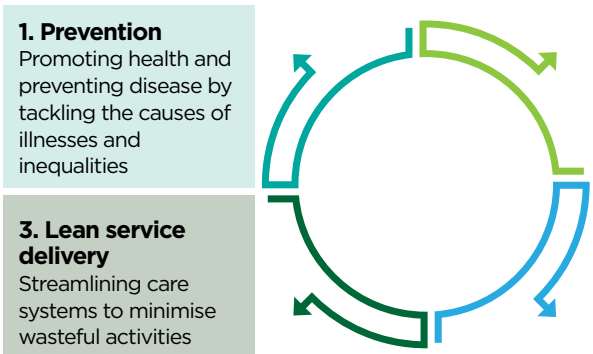
- Cutting carbon;
- Improving patient care;
- Saving money.

These are known as the three central pillars of sustainability, or the triple bottom line.

We implemented the competition in our oncology hospital trust, inviting expressions of interest from across the entire organisation. Five teams were shortlisted for their proposal to make their service more cost-effective, more environmentally friendly and better for either staff or patients. These teams worked with mentors and carbon-modelling advisers from the CSH for 10 weeks, transforming their ideas into projects before submitting their results to the judging panel. Although some non-clinical staff applied, the five shortlisted teams were all from clinical areas of the trust.

In assessing the five projects, the carbon emissions associated with treatment drugs were estimated using an environmentally extended input–output analysis (EEIOA). The CSH used the EEIOA to convert treatment cost into carbon emissions ($kgCO_2e$), using a pharmaceutical factor of 0.128$kgCO_2e$/£ and a medical equipment and instruments factor of 0.465$kgCO_2e$/£. To calculate waste-disposal savings, the weight of items and their packaging was used in conjunction with the emissions factors for domestic and clinical waste.

Fig 1. **Principles of sustainable clinical practice**



Adapted from: Centre for Sustainable Healthcare (nd)

Savings were calculated using a top-down approach through a combination of methods, and included data provided by the sustainability lead, procurement team, pharmacy team and waste-management lead, and from staff ordering systems, medical physics logs and NHS supplies.

The competitors

Nursing outreach team

The nursing outreach team streamlined its resuscitation equipment, removing unnecessary crash trolleys from certain areas in the hospital, as well as non-essential medical equipment and medications from the remaining crash trolleys. The team anticipated environmental savings of 911$kgCO_2e$ per year (equivalent to 2,623 miles driven in an average petrol/diesel car), with annual financial savings of £6,573.

Anaesthetic team

The anaesthetic team assessed the clinical use of piped nitrous oxide, a harmful and potent greenhouse gas, examining its wastage and environmental impact. The project explored ways to cap off unnecessary and leaky pipes, replacing them with cylinder supplies in key areas. The team demonstrated annual cost savings of around £1,700, and considerable environmental savings of >54,000$kgCO_2e$ per year (equivalent to 156,209 miles driven in an average petrol/diesel car).

Surgical theatres team

An anaesthetic practitioner and a practice base educator formed the surgical theatres team. They identified the potential environmental, financial and social benefits of reducing on-the-day surgical cancellations and delays due to unconfirmed bed spaces. Patients whose operations are cancelled can experience emotional distress; they are likely to have fasted unnecessarily, taken time off work (with extended isolation periods due to Covid-19 precautions), and/or arranged transport to hospital. They also undertake a lengthy pre-operative process that includes blood tests, anaesthetic reviews and taking pre-operative medication.

Minimising these delays and cancellations is essential. All of the staff surveyed by the team agreed that delays were a problem, and 81% felt that the process needed to be improved. Interestingly, the team learned that only 43% of staff surveyed understood the link between cancelled cases and increased carbon and environmental costs (caused by waste and opened, unused kit).

The project was designed to make sure a 'golden patient' would be identified for one theatre list and have a bed space confirmed the day before surgery. This meant any issues would be highlighted then, rather than on the day of surgery, which would thereby prompt the escalation process. Without the golden patient, the team predicted a 50% reduction in cancellations, with an initial reduction in overrun time of 20%, leading to annual savings of 870$kgCO_2e$. However, with one golden patient per theatre, they anticipated a 100% reduction in overruns and an annual cost reduction of around £7,000, achieved through medication, energy, wastage and staffing cost savings.

Endocrinology team

The judges awarded the endocrinology team a 'highly commended' certificate for

its hip fracture prevention project. Oncology patients who sustain hip fractures carry a high mortality risk (Ye et al, 2022), and the team utilised the Fracture Risk Assessment Tool (FRAX) to identify those most likely to fracture a hip. This would cut carbon emissions by reducing the need for hospitalisation, thereby lowering the amount of surgical and/or anaesthetic procedures and medication required.

The team's programme had predicted yearly savings of around 2,336kgCO_2e (equivalent to >6,700 miles driven in an average petrol/diesel car) and >£63,500. This is, however, likely to be an underestimate, as ongoing costs of rehabilitation, pain management and potential complications were not included.

Palliative and supportive care team

The palliative and supportive care team was judged to be the winning team (Fig 2), for its pilot study using photobiomodulation to treat or prevent oral mucositis in patients with tongue and tonsillar cancers. Radical radiotherapy increases the risk of oral mucositis, and often results in pain and other debilitating symptoms. Using photobiomodulation improved patients' symptoms, reduced their medication and supplementary feeding requirements, and prevented hospital admissions.

This resulted in considerable projected annual savings of 42,774kgCO_2e (equivalent to 123,197 miles driven in an average petrol/diesel car) and around £530,640, as well as clear patient benefits and quality-of-life improvements. The next article in this series will discuss this winning project in detail.

Judging process

The projects' results exceeded our expectations in terms of the amount of money and carbon emissions they could save.

The CSH promotes the competition's successes widely via its website and social media platforms. It also encourages participants to share their findings using an online case study page, in addition to other promotional tools. The CSH also arranges a ceremony at which the shortlisted projects are presented, and judging takes place in front of an invited audience; this ensures participants' hard work is celebrated.

Our judging panel (Fig 2) comprised the trust's chief executive, chair and other board members, including the net-zero lead and a senior member of the CSH. This ensured engagement at the highest level, both inside and outside of the organisation. All the judges were clearly impressed by the entrants, who were praised for the quality and outcomes of their projects but, moreover, for their passion and drive. Their efforts and commitment to the competition were celebrated, and they were thanked for considering diverse ways to approach problems and produce workable, green solutions.

Fig 2. **Members of the judging panel and winning team**

"The entrants were praised for the quality and outcomes of their projects but, moreover, for their passion and drive"

Analysis

The competition brought staff together from different disciplines to deliver projects with highly encouraging results; this included nurses, medical staff, allied health professionals, educators, and quality improvement and ancillary staff. It created a template to provide direction and focus, with the intention of embedding changes into routine patient pathways and ways of working. With the CSH's support, staff were able to appreciate the positive impacts of their actions on the organisation, patients, finance and the planet.

Healthcare leaders and organisations have both a responsibility and an opportunity to motivate staff and encourage them to work towards achieving global net-zero carbon emissions by 2050. By implementing the principles of sustainable healthcare into everyday practice, we can expect to reap considerable benefits.

By participating in the competition, staff knew they were providing good-quality care while minimising detrimental effects on the environment. This inspired them to consider other projects they could implement, and we hope it will motivate others to think about sustainable changes they may adopt in their area of practice. A regard for the finite resources available should be an integral part of every nurse's role and everyday work (and private) lives.

Conclusion

Rising to the challenge of achieving net-zero carbon emissions in healthcare requires transformative steps, but gives health professionals an opportunity to make positive changes. The Green Team Competition gave staff the tools to grasp this opportunity, resulting in considerable cost and carbon savings. Without such changes and urgent action, the climate crisis will continue to disrupt healthcare delivery and endanger lives. There are moral and practical reasons for health professionals and leaders to drive change and set an example for other industries to follow.

The next article in this series will explore the competition's winning entry in detail. **NT**

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