



Overdiagnosis is increasing the carbon footprint of healthcare

Tackling overdiagnosis takes on a new urgency in the context of a climate emergency

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Clinical practice varies—some is excellent, delivering high quality care, improving health outcomes, and representing excellent value for money. But research over the past two decades has established that a significant minority of clinical care is low value, wasteful, or harmful.¹

At the extreme end of low value care is no value care—otherwise known as overdiagnosis. Overdiagnosis is the detection of harmless conditions that could be safely left undiagnosed and untreated.^{2,3} Once diagnosed, however, a cascade of tests and treatment usually follows, which will not benefit patients who were not unwell to start with. While we acknowledge that identifying individual cases of overdiagnosis is challenging (or impossible), what is clear is that it's real and widespread, turning many people into patients unnecessarily. Globally, 500 000 people a year are overdiagnosed with thyroid cancer, including in low and middle income countries^{4,5}; 70 000 women a year may be overdiagnosed with breast cancer in the US, and 4000 a year in Australia; and 8000 Australian men a year are overdiagnosed with prostate cancer.^{6,7} Overdiagnosis affects all ages and life stages.⁸⁻¹³ In the UK, the problem of overdiagnosis and overtreatment is of such concern to the Royal College of General Practitioners that a standing group on overdiagnosis has been established, which has advanced recommendations to try to combat it.¹⁴ While a growing list of overdiagnosed conditions is recognised, the burden that patients' overdiagnoses places on healthcare services and staff is easily overlooked.

Recently Tennison and colleagues examined carbon dioxide equivalent (CO₂e) emissions in the NHS over three decades, 1990 to 2019, finding that the service had reduced CO₂e emissions by 26%—a world leading achievement.¹⁵ Episodes of inpatient care doubled over the same period and health spending tripled in real terms, even though the population only increased by 17%. Some of the additional episodes of care reflect changing population demographics and increased appropriate diagnoses, but some undoubtedly were caused by overdiagnosis. By definition, overdiagnosis generates carbon emissions without improving health.

Novel efforts to curb overdiagnosis are underway, yet so far have had limited uptake.¹⁶⁻¹⁸ Tackling it, however, takes on a new urgency in the context of the climate emergency. Carbon emissions for zero gain in health outcomes become intolerable.

The rise and rise of overdiagnosis—and its corollaries, over-testing and overtreatment—has unfolded synchronously with the health emergency caused by climate change. Climate change will drive ever more

people to seek medical care for exposure to extreme heat, drought, floods, fire and extreme weather, vector borne diseases, air pollution, and disruptions to food and electricity supply.¹⁹ The additional burden of more patients because of overdiagnosis will be in addition to these surges of climate change driven demand for healthcare. The combined effect of both threatens to overwhelm already overstretched health systems across the world.

The NHS has set ambitious targets to reach zero carbon healthcare by 2040. The NHS England data reported by Tennison and colleagues are revealing: they show that most of the reduction in CO₂e emissions between 1990 and 2019 has come from decarbonisation of UK energy (with large reductions in building energy emissions) and from changing the propellants in respiratory metered dose inhalers. CO₂e emissions generated from provision of clinical care and its associated activities have generally remained stable or increased. Emissions from medical instruments have remained stable and emissions from commissioned care (clinical services procured by the NHS from private healthcare providers) increased fivefold. Between 2001 and 2012 total NHS England emissions increased slightly as investment in healthcare expanded from 4.7% to 7.6% of gross domestic product, before falling again in line with ongoing decarbonisation of UK electricity.¹⁵

To make further and sustained cuts to healthcare's carbon footprint will therefore require changes to models of clinical care. Tackling overdiagnosis and over-treatment will be a key step.

Reducing overdiagnosis and over-treatment is an untapped reservoir of potential to cut healthcare's carbon emissions, while at the same time safeguarding the quality of care and ensuring that patient outcomes aren't adversely affected. A valuable co-benefit will be reductions in healthcare costs.

Clinicians and patients care deeply about climate change and many clinicians are already implementing change. The Gassing Greener project encourages anaesthesiologists to use less desflurane and nitrous oxide, and track their carbon performance.²⁰ Re-usable rather than single use anaesthetic and surgical equipment, such as gowns, can reduce emissions in places where there is decarbonised electricity supply, at equivalent or lower cost.²¹⁻²³ There are many more opportunities for clinicians to green clinical care.²⁴⁻²⁶

The desire to green clinical care could motivate and sustain clinicians in tackling the challenges of overdiagnosis. Knowing that reducing overdiagnosis has the potential to reduce emissions and conserve resources (financial and human) while safeguarding

the quality and safety of healthcare may make dealing with it more salient and rewarding.

Concerted policy action and clinical leadership is needed to enable and accelerate initiatives to deal with overdiagnosis and healthcare's carbon emissions. In a climate emergency, it's vital this happens. The seeds of change are there.

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