

“Consider the seasons”: The Climate Crisis, its Impact on Healthcare, and the Role of the Physician

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“Whoever wishes to investigate medicine properly, should proceed thus: in the first place to consider the seasons of the year, and what effects each of them produces, for they are not at all alike, but differ much from themselves in regard to their changes.”

“On Airs, Waters, and Places”, Hippocrates, 400 B.C.

The association between climate and healthcare is not new. Nearly 2500 years ago, Hippocrates extensively discussed this critical intersection in his treatise “On Airs, Waters, and Places” (1). His formative work, considered by some to be the first attempt to systematically review the association between climate and human health, is more poignant today than ever before, as we face unprecedented challenges of the climate crisis. The science is indisputable: a global increase in temperature of 1.5°C, compared to pre-industrial levels, risks irreversible harm to health (2).

The impact is multifaceted, from direct effects of extreme weather on physical health, to more insidious consequences on mental health and infectious disease patterns. Gaps in social and health equity are predicted to widen. This evolving landscape demands physicians to lead efforts in adaptation and mitigation, and heed Hippocrates’ counsel as we practice medicine in a rapidly changing world.

Global Warming, Global Warning: The Climate Crisis through a Healthcare Lens

The World Health Organisation (WHO) has declared climate change to be the greatest threat to human health in the 21st century, contributing to an additional 250,000 deaths annually between 2030 and 2050 (3, 4). Globally, 3.6 billion people live in areas susceptible to climate change, leading to an increased incidence of issues including malnutrition through disrupted food systems, heat stress, and food-, water- and vector-borne diseases. All have lasting psychological impacts, disproportionately affecting the most vulnerable and disadvantaged. Worldwide, 2 billion people lack safe drinking water. In 2020, 770 million people, mainly in Asia and Africa, faced hunger due to a lack of food crop (3, 5). Climate change also negatively impacts the global health workforce and infrastructure, subsequently affecting environmental and societal determinants of health.

While these statistics may seem distant and unrelatable, examples of the detrimental effects of climate change are sadly evident in the UK. Just a few weeks ago, Storm Henk killed one person, disconnected power in over 100,000 homes, and displaced entire communities. Such reports are increasingly common. Changing rainfall patterns are predicted to contribute to more frequent and severe floods, with direct (e.g. drowning, trauma) and indirect (e.g. mental health impacts, respiratory diseases from mould and damp, rodent-borne diseases) consequences to health (6).

Globally, heatwaves are becoming more frequent, with 175 million additional people exposed to extreme heat in 2015 alone compared to previously. In summer 2003, 70,000 people died as a direct result of the European heatwave (7). In the UK, 4507 heat-related deaths were recorded during the hottest days in 2022 and have increased over recent years (8). At the other extreme, cold weather is increasingly associated with excess mortality, exacerbated by social deprivation and the cost-of-living crisis (9). The climate crisis is another cog in the engine driving social and health inequities.

These interacting factors have a substantial impact on chronic conditions, especially cardiovascular and respiratory diseases, and subsequent morbidity and mortality (10). A joint report by The Academy of Medical Sciences and The Royal Society in 2021 highlighted the impact of particulate matter, emitted during fossil fuel

combustion, which is responsible for 40% of the UK's electricity supply (11). Particulate air pollution increases asthma exacerbations and early deaths due to conditions such as ischaemic heart disease (12). Long-term exposure to air pollution leads to 28,000-36,000 premature deaths annually in the UK (13). Worryingly, these effects are seen at very low levels; in fact, WHO advise there is no safe level for particulate matter (14).

The impact of the extreme weather events has also been observed on violent behaviour, suicide, psychosis, and maternal and infant health (15). Food and water insecurity, displacement and homelessness have been linked to increased levels of anxiety, depression and stress (16). One in three people have reported suffering post-traumatic stress disorder after having their house flooded (17). Shockingly, a UK study found, above 18°C, each 1°C increase in temperature associates with a 3.8% increase in incidence of suicide, and 5% increase in violent suicide (18).

Thus, while the direct impacts of climate change may not be felt equally around the world, the consequences affect everyone. The climate crisis is a healthcare crisis, demanding immediate action.

Prescribing a Greener Future: The Role of the Physician in Climate Advocacy

Healthcare is not only a victim of the climate crisis, but also a contributor. With the NHS responsible for 40% of public sector emissions and 4% of England's total carbon footprint, it has a critical role in mitigating and adapting to the effects of climate change (19, 20). As part of the government's Net Zero Strategy, the NHS aims to become the world's first net zero health service, securing its place as a global leader among health systems in innovation and sustainability (21).

However, the NHS is under record levels of pressure, especially as we emerge from a global pandemic. In 2023, the Royal College of Physicians, a founding member of the UK Health Alliance on Climate Change, published an extensive position paper on the roles of the government, NHS, the College and clinicians in driving down the impact of climate change on healthcare (22). This "call to arms" has been echoed by other high-profile institutions including The Royal Society, The Health Foundation and The Lancet Countdown, which annually details the evolving health profile of climate change (11, 23, 24).

In a system where many already feel overwhelmed, individual actions on climate change can seem insignificant. So, how can clinicians deliver environmentally sustainable healthcare, which leaves an impact?

Approaches can broadly be divided into those at organisational and individual level, as well as advancements in research and innovation. One way to reduce an organisation's carbon footprint is delivering care in the community rather than hospitals, where appropriate. Acute care accounts for a majority of the NHS's carbon footprint (20). By facilitating safe early discharges through an occupational therapy scheme, University Hospital of Wales saved an estimated 15,600 bed days, equating to 573 tonnes CO₂, in one year (25). Hospital visits may be avoided entirely through schemes such as University Hospital Southampton's My Medical Record app (MyMR), which is used to complete virtual reviews. During 2022, it saved over 151,500 miles in patient travel, equating to 42,900 kilos of carbon (26, 27). For unpreventable care, the anaesthetic gas, desflurane, which is 2500 times more potent than carbon dioxide as a greenhouse gas, is due to be phased out completely in the NHS in 2024 (28).

Direct and indirect changes in personal habits, as well as patient education and advocacy, can be equally impactful. The NHS Net Zero report highlighted a very large proportion of NHS staff are motivated to practice more sustainably, heralding an opportunity to harness this passion to drive change (21). Dedicated roles to champion sustainability, such as the RCP Sustainability Fellow, or the Faculty of Medical Leadership and Management Chief Sustainability Officer's Clinical Fellow scheme, provide opportunities for clinicians to actively lead on these efforts.

However, climate change is a responsibility for all of us, not just select individuals (29, 30). 4% of the NHS carbon footprint is due to staff commutes (20, 21). Opting for public transport where possible, or sustainable modes of travel such as walking or cycling, as well as efforts to place training physicians closer to home, may help to reduce this figure. Hybrid working, such as the appropriate use of telephone clinics, virtual reviews, and online training events (borne out of necessity during the pandemic) will be key in reducing unnecessary travel and carbon emissions. Outside the clinical environment, as highlighted by the RCP's Sustainability Officer, Dr Toby Hillman, and demonstrated at Med23, medical conferences can play a role in offering delegates a more sustainable event, for example through plant-based catering, the option to attend virtually, and use of recyclable materials (30).

Ultimately, to mitigate the health effects of climate change, we must look beyond the UK and collaborate with colleagues further afield. As members of the RCP, a global institution with members worldwide, we are in the unique and fortunate position to be able to share best practices across borders, seeking a better future for our patients and wider society.

Conclusion

The climate crisis poses a formidable challenge to healthcare worldwide. It exacerbates existing health problems while creating new medical emergencies. The interplay between the environment and human health has never been more pronounced. As frontline responders to these challenges, physicians have a role which transcends the bounds of hospitals, and a responsibility to advocate for policies to address the root causes of climate change.

It is the duty of the modern physician to embody the foresight of Hippocrates, to "consider the seasons of the year", recognise the interdependence of our environment and health, and contribute to the mitigation of the climate crisis.

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