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Sustainable practice: what can I do?

A new BMJ series offers tangible actions clinicians can take to reduce the carbon footprint of healthcare

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If global healthcare were a country it would rank fifth in the world for greenhouse gas emissions.¹ We must all take action to reduce healthcare emissions—but how? A new *BMJ* series offers a range of ideas, with practical tips on making healthcare systems more sustainable. Each article details one action or project that frontline clinicians can implement, supported by a rapidly growing evidence base, to reduce the carbon footprint of their practice. Online readers can use a linked interactive tool (<https://sand-pit.bmj.com/graphics/2023/tangibleActions-v8/>) to find actions relevant to their role and workplace.

The climate crisis is a health crisis,² and healthcare professionals are on the frontline—seeing more patients with respiratory³ and mental health⁴ conditions caused by wildfires, infectious diseases spread by flooding,⁵ or the serious health effects of record breaking heat waves.⁶ Clinicians want to know how they can help slow this crisis,^{7 8} and we aim to showcase solutions that are within the power of individuals.

Everything, everywhere, all at once

Earlier this year, in a speech following the release of the latest report from the Intergovernmental Panel on Climate Change,⁹ secretary general of the UN António Guterres warned that the crisis requires us to do “everything, everywhere, all at once.”¹⁰

All large scale change begins with engaged, pro-active individuals. While measures such as decarbonising national electricity supplies, or building new hospitals to a net zero standard are outside the direct control of most clinicians, more accessible options can make a real difference to the sustainability of patient care. For example, a 2020 study estimated that switching one patient’s asthma inhaler regimen from metered dose inhalers (with the highest carbon footprint) to dry powder inhalers could save 422 kg CO₂ equivalent per year,¹¹ and others have shown that switches can be made without adversely affecting asthma control.^{12 13} A recent life cycle analysis suggests that replacing single-use face masks with reusable options of equivalent protection can substantially reduce the carbon footprint of mask use.¹⁴ Options such as social prescribing still have a limited evidence base,¹⁵ but schemes that are well designed and well implemented have the potential to reduce the carbon footprint of pharmaceuticals, which account for roughly 25% of healthcare’s footprint.¹⁶

Existing priorities, such as reducing low value care,¹⁷ also support a low carbon health system. Smarter prescribing and deprescribing,¹⁸ for example, save the carbon used in drug manufacture and transport,¹⁶ save money, and reduce harm to patients.¹⁹ As the

interactive infographic shows, more options exist to “reduce” than to “reuse.”

Evidence from surveys of staff and members of professional societies suggest that many want to be part of this change.^{7 8} *The BMJ*’s new series aims to support clinicians and healthcare workers with that ambition. The introductory article,²⁰ included in the recent climate issue of *The BMJ*, sets the scene with an overview of healthcare’s carbon footprint and the pivotal role of clinicians in driving change. Two new articles in this issue of *The BMJ* detail guidance on reducing iron dosing in people with iron deficiency and how to take steps to reduce nitrous oxide waste and loss. We welcome readers’ ideas. Please use the form at <https://bit.ly/46Etl9i> to pitch your article suggestions.

The BMJ has long recognised the seriousness of the climate emergency, and campaigned to cut carbon emissions within healthcare and beyond.^{2 21} That campaign is now shifting towards concrete actions that healthcare professionals can and must take in response to this emergency. We hope the new series will help many more clinicians realise the benefits of more sustainable healthcare for patients and the planet.

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¹ Karliner J, Slotterback S, Boyd R, Ashby B, Steele K. Health care’s climate footprint: How the health sector contributes to the global climate crisis and opportunities for action. *Health Care Without Harm*, 2019. <https://noharm-global.org/documents/health-care-climate-footprint-report>

² Dobson J, Cook S, Wedmore F, Abbasi K. Climate emergency and political will—reaching beyond human usefulness. *BMJ* 2023;383. doi: 10.1136/bmj.p2244 pmid: 37793686

³ Reid CE, Maestas MM. Wildfire smoke exposure under climate change: impact on respiratory health of affected communities. *Curr Opin Pulm Med* 2019;25:-87. doi: 10.1097/MCP.0000000000000552 pmid: 30461534

⁴ Lowe SR, Garfin DR. Crisis in the air: the mental health implications of the 2023 Canadian wildfires. *Lancet Planet Health* 2023;7:-3. doi: 10.1016/S2542-5196(23)00188-2 pmid: 37673541

⁵ Mavrouli M, Mavroulis S, Lekkas E, Tsakris A. Infectious diseases associated with hydrometeorological hazards in Europe: disaster risk reduction in the context of the climate crisis and the ongoing covid-19 pandemic. *Int J Environ Res Public Health* 2022;19:. doi: 10.3390/ijerph191610206 pmid: 36011854

⁶ Arsad FS, Hod R, Ahmad N, et al. The impact of heatwaves on mortality and morbidity and the associated vulnerability factors: a systematic review. *Int J Environ Res Public Health* 2022;19:. doi: 10.3390/ijerph192316356 pmid: 36498428

⁷ England NH. NHS sustainable development unit study. Eventure Research, 2017.

- 8 Kotcher J, Maibach E, Miller J, et al. Views of health professionals on climate change and health: a multinational survey study. *Lancet Planet Health* 2021;5:-23. doi: 10.1016/S2542-5196(21)00053-X pmid: 33838130
- 9 IPCC. Climate Change 2023: synthesis report. contribution of working groups i, ii and iii to the sixth assessment report of the intergovernmental panel on climate change. 2023:-115
- 10 United Nations. Secretary-general's video message for press conference to launch the synthesis report of the Intergovernmental Panel on Climate Change (2023). <https://www.un.org/sg/en/content/sg/statement/2023-03-20/secretary-generals-video-message-for-press-conference-launch-the-synthesis-report-of-the-intergovernmental-panel-climate-change>.
- 11 Janson C, Henderson R, Löfdahl M, Hedberg M, Sharma R, Wilkinson AJK. Carbon footprint impact of the choice of inhalers for asthma and COPD. *Thorax* 2020;75:-4. doi: 10.1136/thoraxjnl-2019-213744 pmid: 31699805
- 12 Price D, Thomas V, von Ziegenweid J, Gould S, Hutton C, King C. Switching patients from other inhaled corticosteroid devices to the Easyhaler®: historical, matched-cohort study of real-life asthma patients. *J Asthma Allergy* 2014;7:-51.pmid: 24748807
- 13 Woodcock A, Janson C, Rees J, et al. Effects of switching from a metered dose inhaler to a dry powder inhaler on climate emissions and asthma control: post-hoc analysis. *Thorax* 2022;77:-92. doi: 10.1136/thoraxjnl-2021-218088 pmid: 35131893
- 14 Chau C, Pauillo A, Ho J, Bowen R, La Porta A, Lettieri P. The environmental impacts of different mask options for healthcare settings in the UK. *Sustain Prod Consum* 2022;33:-82. doi: 10.1016/j.spc.2022.07.005 pmid: 35847564
- 15 Cooper M, Avery L, Scott J, et al. Effectiveness and active ingredients of social prescribing interventions targeting mental health: a systematic review. *BMJ Open* 2022;12:e060214. doi: 10.1136/bmjopen-2021-060214 pmid: 35879011
- 16 Tennison I, Roschnik S, Ashby B, et al. Health care's response to climate change: a carbon footprint assessment of the NHS in England. *Lancet Planet Health* 2021;5:-92. doi: 10.1016/S2542-5196(20)30271-0 pmid: 33581070
- 17 Ellen M, Correia L, Levinson W. Choosing wisely 10 years later: reflection and looking ahead. *BMJ Evid Based Med* 2023;doi: 10.1136/bmjebm-2023-112266.
- 18 Anlay DZ, Paque K, Van Leeuwen E, Cohen J, Dilles T. Tools and guidelines to assess the appropriateness of medication and aid the deprescribing: an umbrella review. *Br J Clin Pharmacol* 2023. . doi: 10.1111/bcp.15906 pmid: 37697479
- 19 Zhou D, Chen Z, Tian F. Deprescribing interventions for older patients: a systematic review and meta-analysis. *J Am Med Dir Assoc* 2023;24:-25. doi: 10.1016/j.jamda.2023.07.016. pmid: 37582482
- 20 Braithwaite J, Pichumani A, Crowley P. Tackling climate change: the pivotal role of clinicians. *BMJ* 2023;382:e076963. doi: 10.1136/bmj-2023-076963 pmid: 37770093
- 21 Stott R, Godlee F. What should we do about climate change? Health professionals need to act now, collectively and individually. *BMJ* 2006;333:-4. doi: 10.1136/bmj.39028.427164.BE pmid: 17095763