

PRESS RELEASE

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Endocrinologists asked to step up efforts to reduce carbon footprint of healthcare

Singapore, 3 June 2025 — Modern medical practices make widespread use of plastics, flame retardants, and perfluoroalkyl substances (PFAS), a group of long-lasting chemicals used to make materials water and stain-resistant. These substances contribute towards climate change and potentially expose patients to endocrine-disrupting chemicals (EDCs). EDCs include phthalates (used to soften plastics), bisphenol A (BPA) (found in some medical containers and devices), as well as PFAS. Our endocrine system helps produce and release hormones that regulates essential functions in our bodies. If something goes wrong with the endocrine system, it could lead to disorders such as diabetes, thyroid diseases, infertility, and growth problems.

A new international review led by researchers from the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine), has highlighted the often-overlooked environmental impact of healthcare, especially in endocrinology. These conditions are both common and often require long-term treatment, which means the way endocrine care is delivered can have a significant environmental footprint. The study calls on clinicians to be part of the conversation and quest for more sustainable measures.

Published in [Nature Reviews Endocrinology](#), the article brings together perspectives from endocrinologists, ecotoxicologists, and sustainability experts across Singapore, India, the United Kingdom, Canada, and the United States.

“Healthcare aims to protect human health, yet it also generates substantial pollution, from greenhouse gases and microplastics to chemical contaminants,” said Assistant Professor Chantelle Rizan, from the Centre for Sustainable Medicine (CoSM) at NUS Medicine, and lead author of the review. “Endocrinologists have a unique role to play in both recognising and reducing these harms whilst providing high quality appropriate patient care.”

The review outlines concrete strategies to improve sustainability in endocrine care — from switching to reusable medical devices and reducing unnecessary tests, to advocating for stricter regulations on the use of toxic chemicals in healthcare materials. For example, insulin used in diabetes treatment could add over 1,000 kilograms of CO₂ emissions to a patient’s

carbon footprint over 30 years, which is roughly the same as driving a petrol-powered car for 4,000 kilometres.

By helping patients manage their diabetes more effectively from the start, the carbon footprint of their care can be cut by nearly 18% over 50 years. If their diabetes worsens and they move on to more complex treatments or multiple medications, their care becomes more resource-heavy and creates more carbon emissions. Other sustainable measures, such as reusable medical devices instead of single-use plastics, consolidating clinic visits and improving medication adherence, could further cut emissions by up to 56%¹ for some healthcare items. These changes not only help the environment but can also improve patient care and reduce unnecessary healthcare costs.

Dr Eng Pei Chia, co-author of the study and Consultant in the Division of Endocrinology, Department of Medicine, National University Hospital (NUH), said, “This is a complex challenge for endocrinologists and healthcare professionals. While unintended consequences must be considered, we need open discussions to advance sustainable healthcare. We have been advocating sustainability through recycling of insulin pens over the past few years. More can still be done, through encouraging the use of reusable insulin pens to reduce waste. With younger generations increasingly eco-conscious, promoting reusables could enhance patient engagement in diabetes care. Ongoing awareness and education are key to driving positive change.”

With healthcare accounting for up to 5% of global greenhouse gas emissions, the review serves as a call to action to examine and embrace more environmental responsible models of care. This aligns with broader efforts by CoSM to support data-driven and actionable steps in decarbonising healthcare globally. As the first research centre in Asia and the largest in the world to lead and support healthcare decarbonisation and climate resilience, the Centre is at the vanguard of an emerging multidisciplinary field of practice dedicated to improving the health of patients in the face of climate change and driving the transition to net zero healthcare.

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¹ Keil, M., Viere, T., Helms, K. & Rogowski, W. The impact of switching from single-use to reusable healthcare products: a transparency checklist and systematic review of life-cycle assessments. Eur. J. Public. Health 33, 56–63 (2023).

About National University of Singapore (NUS)

The National University of Singapore (NUS) is Singapore's flagship university, which offers a global approach to education, research, and entrepreneurship, with a focus on Asian perspectives and expertise. We have 16 colleges, faculties, and schools across three campuses in Singapore, with more than 40,000 students from 100 countries enriching our vibrant and diverse campus community. We have also established more than 20 NUS Overseas Colleges entrepreneurial hubs around the world.

Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments, and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, research centres of excellence, corporate labs and more than 30 university-level research institutes focus on themes that include energy; environmental and urban sustainability; treatment and prevention of diseases; active ageing; advanced materials; risk management and resilience of financial systems; Asian studies; and Smart Nation capabilities such as artificial intelligence, data science, operations research, and cybersecurity.

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About the NUS Yong Loo Lin School of Medicine (NUS Medicine)

The NUS Yong Loo Lin School of Medicine is Singapore's first and largest medical school. Our enduring mission centres on nurturing highly competent, values-driven, and inspired healthcare professionals to transform the practice of medicine and improve health around the world.

Through a dynamic and future-oriented five-year curriculum that is inter-disciplinary and inter-professional in nature, our students undergo a holistic learning experience that exposes them to multiple facets of healthcare and prepares them to become visionary leaders and compassionate doctors and nurses of tomorrow. Since the School's founding in 1905, more than 12,000 graduates have passed through our doors.

In our pursuit of health for all, our strategic research programmes focus on innovative, cutting-edge biomedical research with collaborators around the world to deliver high impact solutions to benefit human lives.

The School is the oldest institution of higher learning in the National University of Singapore and a founding institutional member of the National University Health System. It is one of the leading medical schools in Asia and ranks among the best in the world (Times Higher Education World University Rankings 2025 by subject and the Quacquarelli Symonds (QS) World University Rankings by subject 2025).

For more information about NUS Medicine, please visit <https://medicine.nus.edu.sg/>