

Women's health, the climate crisis and the pathway to a net-zero health system

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“We do not inherit the Earth from our ancestors, we borrow it from our children”

Chief Seattle, Suquamish and Duwamish chief.

Health impacts of the climate and ecological crises

Climate change and ecological breakdown damage human health through extreme heat, food insecurity, infectious disease outbreaks and life-threatening severe-weather events.¹ Meanwhile, climate-driven conflict such as the Syrian civil war, and mass displacement as seen in Bangladesh, inflict a huge toll on health, as well as disrupting healthcare provision.^{2,3} The existential nature of these interconnected threats has been recognised in the declaration of a climate emergency by the UK Health Alliance on Climate Change (UKHACC).⁴

Adverse health impacts of the climate and ecological crisis should be of particular concern to obstetricians and gynaecologists, given they disproportionately affect marginalised groups including women, pregnant people and children.^{5,6}

Alarming evidence is emerging to link extreme heat exposure in pregnancy with preterm birth, low birth weight, fetal anomalies, hypertensive disease and placental abruption.⁷ Air pollutants, such as particulate matter and nitrogen oxides, are associated with increased risks of hypertensive disorders of pregnancy, gestational diabetes and cardiovascular events in labour.⁸ Microplastic particles,

with as yet undetermined clinical effects, have been detected within human placentae and fetal meconium.^{9,10}

Moreover, women and girls affected by mass displacement events face elevated risks of sexual violence and trafficking,¹¹ while impoverishment resulting from agricultural land degradation is driving increasing rates of child marriage.¹² Our failure to mitigate global heating is setting the stage for a humanitarian catastrophe, with credible predictions of over one billion climate refugees by 2050.¹³

Health care's contribution to the problem

The healthcare sector is responsible for an estimated 4.4% of global greenhouse gas emissions.¹⁴ A recent systematic review identified 17 studies reporting on environmental impacts of obstetric and gynaecological services across domains including vaginal birth, surgical procedures, menstrual products, vaginal specula and patient transportation.¹⁵ In a US hospital, for example, the greenhouse gas emissions of a vaginal delivery were found to be half that of a caesarean section,¹⁶ a finding contradicted by a recent UK analysis, which found the carbon footprint of an average vaginal birth in the UK to be six times that of a caesarean.¹⁷ This dramatic difference is explained by the former study omitting the impact of nitrous oxide (Entonox), which has almost 300 times the global warming potential of carbon dioxide, and thus increases the climate impact of vaginal delivery 25-fold.¹⁸

Operating theatres also represent a known carbon hotspot. Theatre energy use is three to six times higher than that of the

rest of the hospital combined, and volatile anaesthetics contribute up to two-thirds of the total greenhouse gas emissions associated with a hysterectomy.^{19,20} Surgical approach is also significant, with robotic hysterectomies having a larger environmental footprint compared with laparoscopic, abdominal, and vaginal approaches (which generate 69%, 37% and 35% of the emissions, respectively).

Gynaecology outpatient care, along with theatres, is a significant source of single-use plastic consumption, with one US hospital reporting the use of 5875 disposable vaginal specula per year.²¹ Replacing these speculums with reusable alternatives could produce a carbon footprint reduction of 75%.

Especially relevant to outpatient gynaecology is that patient and staff travel represents 18% of the greenhouse gas emissions generated by England's healthcare sector and is a major source of local air pollution.²² Beyond the hospital, single-use menstrual products have a substantial environmental burden, taking an estimated 500–800 years to break down in landfill,²³ while hormonally active contraceptives contribute to the chemical pollution of our waters and soil.²⁴

The role of a doctor in the climate and ecological emergency

As health professionals we can play a crucial role in mitigating the adverse health impacts outlined, both through action to sustainably transform our health system, and by leveraging our trusted position within society to advocate for the wider changes needed. The UK government recognised these responsibilities and opportunities in its 'Climate and health: applying All Our Health' (2022) guidance, stating, "Health and care professionals should recognise the climate crisis as a health crisis, and therefore climate action as a core part of their professional responsibilities."²⁵

Sustainable value in health care

Recognising that sustainability constitutes an essential element of value represents an important shift in perspective for industrialised societies, whose progress has

relied on continuous resource extraction. The First Nation's seventh-generation principle is a compelling illustration of how sustainability should be integral to value, requiring that actions are judged by the impact they will have on the wellbeing of the seventh generation hence.²⁶ The Welsh government's landmark 'Wellbeing of Future Generations Act' is a modern equivalent and places a responsibility on the Welsh government to consider the impact of its policies and legislation on future generations.²⁷

The sustainable value equation (Figure 1) describes this new perspective as applied to health care. It emphasises the need to consider not just patient and population outcomes today (the top line), but also the environmental, social and financial impacts of the care we provide (triple bottom line). Crucially, this equation grants change makers the authority and obligation to broaden their focus to include the environmental impacts of care.

Sustainable transformation of the NHS

In 2022, NHS Scotland became the first health service globally to set a net-zero emissions target,²⁹ and all devolved nations of the UK have since followed suit. Given that the majority of the NHS's emissions result from the medical consumables we use (Figure 2), it follows that health professionals must be key stakeholders in this process.

The principles of sustainable health care (Figure 3) offer guidance to healthcare professionals participating in this crucial initiative. The principles are arranged in a hierarchy of importance, emphasising that disease prevention and patient empowerment have greater impacts on patient outcomes and sustainability, compared to the changes also needed to streamline clinical pathways and adopt low-carbon treatment options.

Sustainability in quality improvement

Quality improvement (QI) is the recommended approach for health professionals seeking to enhance care. Ensuring that sustainability is integrated at the core of QI could therefore empower practitioners to participate in the task of meeting



Figure 1. The sustainable value 'equation'. Reproduced from Mortimer and Fisher.²⁸

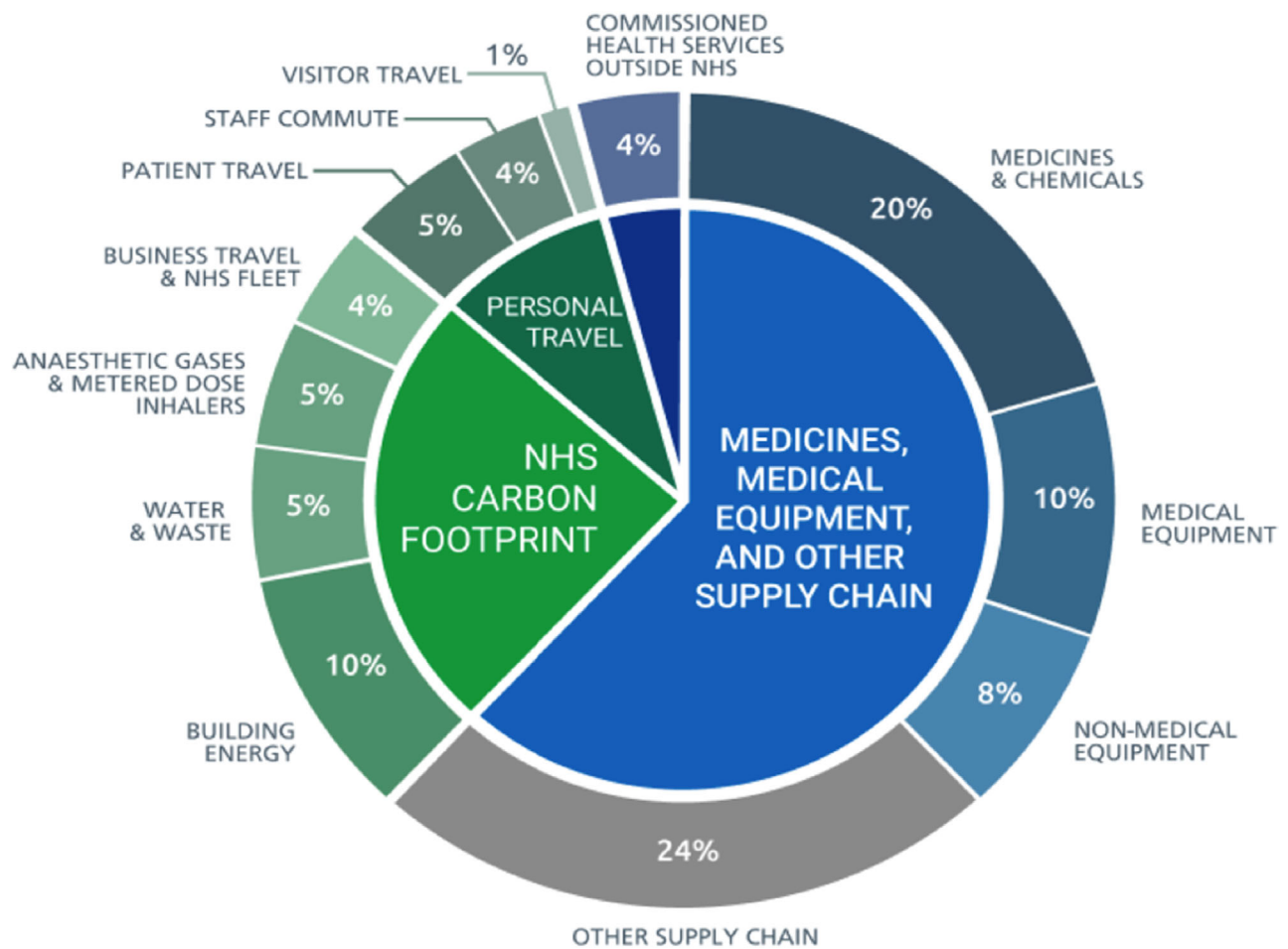


Figure 2. Sources of carbon emissions by proportion of total NHS carbon footprint.³⁰

our climate commitments and support the education of health professionals in this vital field.

Sustainability has been recognised as a core domain of quality by the Royal College of Physicians (RCP), and a framework for integrating sustainability within existing quality improvement approaches (SusQI) has been successfully modelled by the Centre for Sustainable Healthcare.³²

Examples of sustainable healthcare initiatives in obstetrics and gynaecology

Although behind the curve compared with other specialties, there is evidence of progress within obstetrics and gynaecology. For example, with regard to Entonox-related emissions, Hull University Teaching Hospitals has tackled its Entonox leaks and thereby achieved an 87% reduction in related emissions, while the Newcastle-upon-Tyne Hospitals have introduced Entonox 'Cracking', a technology which breaks down exhaled nitrous oxide into oxygen and nitrogen.^{33,34}

Maternity care represents a unique opportunity to influence the health outcomes of women and their families and can thereby also drive down the environmental burden of health care by improving health.³⁵ Examples of prevention and patient empowerment approaches with environmental benefits include antenatal smoking cessation,^{36,37} dietary and exercise advice,^{38,39} and optimising glycaemic control for women with diabetes.⁴⁰ Box 1 outlines a few interventions which obstetrics and gynaecology doctors could consider in their own practice.

The Royal College of Obstetricians and Gynaecologists (RCOG), which is a member of the UK Health Alliance on Climate Change (UKHACC),⁴¹ has recently undertaken a number of actions to support the climate and health agenda including: collaboration on the Green Surgery report,⁴² development of a climate and health eLearning module,⁴³ advocacy on air pollution⁴⁴ and divestment of its financial portfolio away from fossil fuels.⁴⁵

Despite this progress, the RCOG remains a low, albeit improving, scorer on the Climate and Health Scorecard,⁴⁵

1. PREVENTION

Promoting health and preventing disease by tackling the causes of illnesses and inequalities

3. LEAN SERVICE DELIVERY

Streamlining care systems to minimise wasteful activities



2. PATIENT SELF-CARE

Empowering patients to take a greater role in managing their own health and healthcare

4. LOW CARBON ALTERNATIVES

Prioritising treatments and technologies with a lower environmental impact



Mortimer, F. The Sustainable Physician. Clin Med 10(2). April 1, 2010. D110-111.

Figure 3. The principles of sustainable clinical practice.³¹

Box 1. Examples of sustainability interventions in obstetrics and gynaecology.

- Patient empowerment:
 - Use of 'making every contact count (MECC)' tools
 - Postpartum contraceptive advice and support
- Prevention:
 - Dietary/exercise advice/support for women with gestational diabetes
 - Use of obstetric anal sphincter injury (OASI) prevention protocols and antepartum pelvic floor exercises
- Lean pathways:
 - Appropriate use of telephone consultations and patient-initiated follow-up
 - Improving utilisation of outpatient procedures
- Low carbon alternatives:
 - Prescribing generic estradiol tablets instead of *Vagifem*
 - Replacing single-use metal/plastic instruments with reusable instruments

Box 2. Examples of actions that obstetrics and gynaecology doctors can take outside their clinical practice.

- Personal actions:
 - Financial – ethical bank, ethical energy, ethical investments
 - Travel and consumption – less consumption, active travel
 - Dietary changes – reduce meat and dairy
- Community and political actions:
 - Patient, peer and community education and engagement
 - Lobbying – MPs and representative bodies (RCOG, BMA)
 - Activism – e.g., Medact, Health for Extinction Rebellion, Plant Based Health Professionals, Doctors Association UK

which tracks action taken by medical organisations. Declaration of a climate emergency and a public commitment to move its banking from Barclays, the leading European financier of fossil fuel extraction,⁴⁶ are among actions not yet undertaken, which have the potential to carry influence within the College's membership and beyond.

Likewise, obstetrics and gynaecology doctors should consider the non-clinical actions they can take, with suggestions outlined in Box 2.

Conclusion

The climate health emergency is already impacting the health of our patients and, whether convenient or not, our profession is set to be profoundly changed by this crisis over the coming decades.

As the doctors responsible for safely delivering the next generation into this world, we as obstetricians and gynaecologists have an important role, not only in sustainably transforming our healthcare system, but also in engaging our patients, our politicians, and the population more generally in the need for urgent action to safeguard the health of our world's children.

Contribution to authorship

AK visualised, wrote, reviewed and edited the article; KH wrote, reviewed and edited the article; MN conceptualised

the article; AC wrote, reviewed, edited and supervised the article. All authors approved the final version.

Disclosure of interests

There are no conflicts of interest.

Supporting Information

Additional supporting information may be found in the online version of this article at <http://wileyonlinelibrary.com/journal/tog>

Infographic S1. Women's health, the climate crisis and the pathway to a net-zero health system.

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