

When Health Care Harms the Climate: The Case for a Climate Standard of Care

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The most consequential exposure in the climate-and-health conversation may not be only the wildfire smoke plume, the wet-bulb heat day, or the once-in-five-hundred-year flood. It may also be the health care system itself. The US health care sector is responsible for approximately 8.5 percent of national greenhouse gas emissions—the highest per capita rate of any health system among industrialized nations (Eckelman et al., 2020). Globally, health care accounts for between 4.4 and 5.2 percent of net emissions, exceeding the footprints of aviation and shipping; if the global health sector were a country, it would be the fifth-largest emitter on the planet (Health Care Without Harm and Arup, 2019; Romanello et al., 2023).

This is the unresolved paradox at the center of climate-and-health work. The institutions that increasingly diagnose climate change as a defining health threat of the 21st century are themselves major contributors to that threat. A growing scholarship has examined what climate change does to medicine. Less attention has been paid to what medicine does to the climate, and even less to how that reciprocal relationship should be translated into clinical, regulatory, and reimbursement standards (Abel et al., 2024).

This commentary advances a simple but underdeveloped argument: climate harm caused by the delivery of health care could be understood as iatrogenic harm. It could therefore be treated with the seriousness that medicine reserves for hospital-acquired infections, preventable medical

errors, and other avoidable harms. The remedy is not another pledge, toolkit, or sustainability report alone. It is the construction of a Climate Standard of Care—a clinical and policy framework in which carbon-intensive care is treated as a health-relevant exposure, decarbonization as a quality goal, and avoidable high-emission care as a matter of professional responsibility.

Why Existing Frames Have Been Insufficient

Three frames have dominated climate-and-health discourse over the past decade, and each has important strengths. Yet none has been sufficient to change the operating logic of health care.

The first is vulnerability: patients are vulnerable, supply chains are vulnerable, hospitals are vulnerable, and communities are vulnerable. This framing is morally compelling and often accurate. But it can position the health sector primarily as a victim of climate change rather than as an actor whose own practices contribute to climate-related harm. The result is often adaptation planning without corresponding transformation in clinical behavior, procurement, energy use, or payment policy.

The second is co-benefits: decarbonization improves cardiovascular and respiratory health, so the health sector should pursue it because it is good for patients. This framing is true and valuable. But it often treats emissions reduction as an optional virtue rather than a core element of health care quality. US health-sector emissions

rose 6 percent between 2010 and 2018, even as climate-and-health scholarship and institutional commitments expanded (Eckelman et al., 2020).

The third is sustainability reporting, with its taxonomies of Scope 1, 2, and 3 emissions. Disclosure is necessary. But in US health care, measurement has not yet been consistently paired with consequence. Hospitals may be praised for measuring emissions even when measurement does not lead to lower emissions, changed clinical practice, or altered payment incentives (Abel et al., 2024).

Medical practice tends to change most reliably when moral concern is converted into professional standards, public reporting, payment incentives, and organizational accountability. Hand hygiene changed when central line–associated bloodstream infections became measurable, reportable, financially salient, and reputationally consequential (Pronovost et al., 2006). Opioid prescribing changed when clinical norms, regulatory scrutiny, and legal accountability shifted (Dowell et al., 2016). Sepsis protocols changed when quality measurement and reimbursement policy reinforced clinical expectations (Levy et al., 2018). Carbon-intensive health care could change if it were subjected to comparable institutional machinery.

The Core Proposal: A Climate Standard of Care

A Climate Standard of Care reframes greenhouse gas emissions from a corporate sustainability metric into a health care quality concern. It rests on four propositions.

First, carbon-intensive care is a health-relevant exposure. The World Health Organization conservatively projects approximately 250,000 additional deaths per year between 2030 and 2050 from climate-attributable malnutrition, malaria, diarrheal disease, and heat stress alone (WHO, 2023). Recent attribution science assigns 37 percent of warm-season heat-related deaths between 1991 and 2018 to anthropogenic climate change, with mortality increases evident on every continent

(Vicedo-Cabrera et al., 2021). Domestically, US health-sector pollution was estimated to cause a loss of about 388,000 disability-adjusted life-years in 2018—a disease burden within the same order of magnitude as years of life lost from preventable medical errors (Eckelman et al., 2020). These harms are population-level and cumulative, but they are not abstract. They are produced through identifiable systems of energy use, procurement, prescribing, testing, transportation, and clinical delivery.

Second, clinical decisions contribute to that exposure. A clinician is rarely the sole cause of climate-related harm. Nor does population-level attribution map neatly onto individual malpractice causation. But medicine already recognizes that foreseeable, cumulative harms can require changes in professional practice. A clinician who orders a low-value MRI, a redundant pre-operative work-up, or a high-global warming potential anesthetic when a clinically equivalent lower-emission alternative is available contributes to a foreseeable harm without offsetting clinical benefit. The first-order response should not be individual blame. It should be professional guidance, clinical decision support, payment reform, and institutional standards that make lower-carbon care the default when clinical outcomes are equivalent.

Third, decarbonization could be treated as a quality measure, not merely a sustainability measure. Hospitals already report dozens of process and outcome measures tied to reimbursement. Adding a carbon-intensity-per-discharge measure—risk-adjusted for case mix, patient complexity, payer mix, facility age, and regional energy profile—could move decarbonization from a voluntary pledge to an operational priority. To avoid penalizing safety-net institutions, the measure could reward improvement as well as absolute performance and could be paired with capital support for under-resourced facilities. Hospital care alone accounts for approximately 36 percent of US health-sector emissions, energy-use benchmarking through the ENERGY STAR Portfolio

Manager is widely used, and a growing number of hospitals already report some form of building energy data through federal, state, and voluntary programs (Seervai et al., 2022; Abel et al., 2024).

Fourth, therapeutic de-escalation is a climate intervention. Approximately one-quarter of US health spending—on the order of \$760 billion to \$935 billion per year—has been estimated to be wasteful, with low-value clinical care a substantial component (Shrank et al., 2019). Every unindicated computed tomography scan, redundant antibiotic course, duplicative laboratory test, or unnecessary procedure carries a carbon cost without corresponding patient benefit. A Climate Standard of Care extends evidence-based medicine into the planetary domain. It does not ask clinicians to ration beneficial care. It asks them to avoid care that is clinically unnecessary, financially wasteful, and environmentally harmful.

Five Mechanisms to Operationalize the Standard

To make a Climate Standard of Care operational rather than aspirational, five mechanisms could be advanced together.

First, health systems could report a carbon-attributable health burden indicator alongside established quality and safety measures. Hospitals could publish an annual estimate of the climate-related health burden embedded in their operations, using transparent emissions inventories, social cost of carbon estimates, and emissions-to-health-damage conversion methods. Such an index need not be punitive at the outset. As with other quality measures, its power would come from transparency, comparison, and improvement over time.

Second, the US Centers for Medicare & Medicaid Services (CMS) could pilot a climate-linked reimbursement program through the Center for Medicare and Medicaid Innovation. A carbon-adjustment factor in the Inpatient Prospective Payment System could be modeled on existing quality programs, but with careful safeguards. For example, hospitals in the highest quartile

of risk-adjusted carbon intensity per discharge could face a modest payment reduction, while those demonstrating substantial improvement or reaching low-carbon benchmarks could receive bonuses. The dollar amounts should be conservative initially. The policy signal would matter more than the immediate financial magnitude.

Third, specialty societies and health systems could develop a “Scope 4” framework for prescribed emissions. Existing emissions accounting tracks what an institution emits directly, purchases as energy, and procures through supply chains. It does not adequately capture what clinicians prescribe into existence: the lifetime emissions of chronic medications, the embodied carbon of implanted devices, the imaging cascade triggered by incidental findings, or the downstream emissions of unnecessary follow-up care. A Scope 4 framework would allow specialty societies to publish carbon-weighted clinical guidance and enable electronic health records to display the climate cost of clinically equivalent options at the point of ordering.

Fourth, clinicians could incorporate climate-informed consent when elective procedures or therapies have clinically equivalent high- and low-carbon alternatives. Inhaled anesthetics provide a useful example. Desflurane has a 100-year global warming potential approximately an order of magnitude greater than sevoflurane and can produce, in clinically equivalent doses, substantially greater carbon dioxide-equivalent emissions (Sulbaek Andersen et al., 2010; ASA, 2024). Detailed emissions data need not be included in every clinical encounter. But when the clinical alternatives are meaningfully equivalent and the environmental differences are material, the environmental dimension should be part of shared decision making.

Fifth, law and regulation could, over time, begin to recognize forms of accountability for avoidable climate-intensive care. Tort law is unlikely to be the first or most efficient pathway for health-sector decarbonization. The more immediate tools are

payment, accreditation, professional standards, public reporting, and procurement reform. Still, legal doctrine often follows professional norms. As lower-carbon alternatives become standard practice in specific clinical contexts, continued routine use of high-emission options without clinical justification may increasingly be difficult to defend. The objective should not be litigation volume. It should be doctrinal clarity: climate-relevant clinical choices are part of reasonable care when they affect patient and population health and when lower-impact alternatives are clinically equivalent.

Who Could Act First

Several institutions are well positioned to translate this framework into practice. CMS, through the Center for Medicare and Medicaid Innovation, could test carbon-sensitive payment models that reward improvement and protect safety-net institutions. The Joint Commission and other accrediting bodies could incorporate climate-related performance into quality and safety expectations. Specialty societies could issue clinical guidance for high-yield areas such as anesthesiology, radiology, surgery, pharmacy, and low-value care. Health systems and electronic health record vendors could build decision-support tools that make the lower-carbon choice easier when outcomes are equivalent.

The sequencing matters. A Climate Standard of Care could begin where clinical equivalence is clear, emissions differences are substantial, measurement is feasible, and equity safeguards can be built from the start. The goal is not to make every bedside decision a climate calculation. The goal is to create a system in which avoidable emissions are treated like other avoidable harms: measured, reduced, and no longer normalized.

Anticipating Objections

Several potential objections deserve direct response. The first is that this framework blames clinicians for a structural problem. It does not. Rather, it recognizes that clinicians operate within structures but also shape them. Clinicians are often the final common pathway through which the health

system's carbon-intensive infrastructure becomes patient care. Structural change in medicine has historically required clinical engagement because professional norms, ordering behavior, and quality standards determine whether institutional reforms take hold.

The second is that climate-attributable harm is too diffuse to regulate. However, many accepted areas of public health regulation address diffuse, probabilistic, cumulative harms. Tobacco-attributable mortality, particulate matter exposure, and antimicrobial resistance all involve complex causal pathways. Yet medicine and public health have developed regulatory, clinical, and legal responses because the harms are foreseeable, measurable, and preventable. Climate-related health harms share these characteristics.

The third is that carbon-adjusted reimbursement could penalize safety-net hospitals. This is a serious concern, and it is best understood as a design challenge that any such framework would need to address. A fair model would adjust for case mix, facility age, payer mix, regional energy sources, and capital constraints. It would reward improvement over time, not only absolute performance. It would also link penalties to reinvestment mechanisms so that under-resourced hospitals receive the capital needed to modernize facilities, reduce energy waste, and adopt lower-emission technologies.

The fourth is that climate standards could conflict with patient-centered care. They should not. A Climate Standard of Care applies most clearly when clinical outcomes are equivalent or when an intervention is low value to begin with. It does not ask clinicians to deny beneficial treatment because of emissions. It asks them to avoid unnecessary care and to choose lower-emission alternatives when patient outcomes are not compromised.

The fifth is that incorporating climate considerations could extend medicine beyond its appropriate clinical role and into value judgments. However, medicine has always made normative judgments about preventable harm. Smoking cessation, vaccination, opioid stewardship, infection control, and seat belt counseling all reflect

professional judgments about behaviors and systems that predictably affect health. The question is not whether climate belongs in medicine. The question is whether medicine will treat its own contribution to climate-related harm with the same seriousness it applies to other preventable harms.

Key Takeaways

The health sector occupies a difficult but necessary position in the climate conversation. The sector speaks with authority about the health consequences of climate change while contributing substantially to the greenhouse gas emissions that drive it. That tension is becoming harder to sustain. The next decade of climate-and-health work will be judged not only by how well the sector describes the harms climate change causes, but by how rigorously it accounts for the harms health care itself produces.

A Climate Standard of Care is one path to that accounting. It treats carbon-intensive care as a health-relevant exposure, decarbonization as a quality goal, prescribed emissions as a clinical choice, and avoidable high-emission care as a preventable harm. It assumes that the health sector will decarbonize most reliably when emissions reduction is embedded in standards, incentives, contracts, accreditation, and clinical workflows.

The Hippocratic tradition has always had a planetary dimension, even if the profession has been slow to read it that way. To do no harm in the era of anthropogenic climate change is not only to protect patients from climate-related diseases. It is also to reduce the avoidable climate harms produced in the course of caring for them. The sooner that principle is written into standards, codes, and contracts, the sooner the field's diagnosis becomes therapeutic.

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