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The counterintuitive role of efficiency: implications for the ecological impact of health care



Health systems must decarbonise and, in rich nations, degrow their overall ecological impact if they are to operate within ecological limits.^{1,2} This imperative has inspired a range of policies and practices for sustainable health care, including those focused on efficiency, defined here as measures that seek to deliver an equivalent service using fewer inputs.¹ In health care, as in other sectors, efficiency measures are attractive for several reasons: they appear to avoid tradeoffs between the interests of patients, the environment, and health system funders; their benefits can be quantified in formats familiar to decision makers; and they are premised on providing the same care that people have come to expect.³ In short, efficiency is seemingly objective and apolitical.⁴ However, as critics note, efficiency measures alone cannot produce sustainable health systems. Other efforts are necessary, including those to eliminate care that is inappropriate or of little benefit to patients and to shift approaches from curative to preventive.¹ In this Comment, we expand on these criticisms, arguing that efficiency measures can directly, but unintentionally, contribute to growing ecological harms by entrenching what are ultimately unsustainable practices.³

A first observation is that increasing efficiency generally depends on delivering the same service with fewer inputs.³ For example, one manufacturer of robotic surgery technology reports that efficiency measures saved 996.37 metric tons of greenhouse gases in 2021.⁵ This efficiency claim takes the current scale of robotic surgery as given and compares a world with efficiency measures against a counterfactual without them. But how can we understand such avoided emissions in the context of evidence that, for some procedures, a robotic approach incurs a 5-times increase in embodied energy and a 2.5-times increase in emissions compared with non-robotic approaches?^{3,6} Our intent is not to point out so-called greenwashing; indeed, any efficiency calculation must necessarily draw boundaries around the system in question. The problem is that these analytical boundaries, which are deliberately chosen yet largely invisible to observers, can exclude more ecologically sound practices because they do not

provide exactly equivalent levels of service.³ Moreover, despite the appeal of quantification, the efficiency approach inevitably highlights only some characteristics (eg, greenhouse gas emissions) while obscuring more complex and unquantified considerations, such as the loss of open and laparoscopic surgical skills.

The problems that arise when meanings of service and expectations of demand are taken for granted can also be observed in pharmaceuticals. Examining the production of morphine, McAlister and colleagues⁷ found that the lifecycle impact of producing 100 mg of morphine sulfate was 204 g of CO₂ equivalent, with efficiency gains to be made especially in packaging.⁷ Although rigorous, their discussion reproduces the limitations of the efficiency approach: broad changes are imagined for pharmaceutical manufacturing, but the roles of patients who receive the drugs, providers who prescribe them, and broader structural forces in constituting demand are rendered invisible. Looking more closely at morphine demand, we observe that, in a study of patients with femur fractures, two (8%) of 25 Vietnamese patients reported receiving too little analgesia compared with 20 (80%) of 25 US patients, even though Vietnamese patients received a thirtieth of the amount of morphine equivalents given to US patients on average.⁸ These data raise questions about the needs being met by analgesia in this context (eg, rapid return to work to meet financial obligations) and the potential for lower-carbon, non-pharmaceutical methods of meeting those needs (eg, paid medical leave).

We do not oppose surgical innovation or the use of opioids in general, and our arguments are not a call to simply reduce use before reusing or recycling. We are mindful that opioids and safe surgery are, in any case, unavailable for the global majority.^{9,10} Instead, and as our examples suggest, the more fundamental problem is that a headlong pursuit of efficiency can promote forms and levels of service that are unsustainable no matter how efficiently they are delivered. This approach conceals alternative possibilities for more ecologically sound practices and, ultimately, is counterproductive to sustainability.³

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The current unsustainable state of health systems is the sum of political choices about how health and different kinds of health care are valued. Efficiency measures preserve current ways of valuing health and health care by marginalising sustainable alternative practices. Yet, building sustainable health-care systems requires making new political choices that value health and health care in ways compatible with planetary thriving. Engaging with these politics would require facing contested questions about who benefits from incremental improvements to highly resource-intensive care and the kinds of care that are ecologically compatible with delivering high-quality health care for all. Resolving these types of challenges would require a shift in thinking about sustainable health care and novel interdisciplinary collaborations across the natural sciences, social sciences, and humanities. By embracing such collaborations and taking a critical perspective on efficiency, we have the potential to make great advances in our understanding of the history and meaning of health-care needs and the changes to services and structures that could bring health care within ecologically safe limits.

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