ANNALS OF SURGERY OPEN
OPEN

Is Climate Change the Surgeon's "Shift"?

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Of all the things surgeons have to worry about when making patient care decisions, is climate change now also one of them? In their article "A Standardized Method for Estimating the Carbon Footprint of Disposable Mini-Invasive Surgical Devices: Application in Transurethral Prostate Surgery," Misrai et al[1] make the case that it is. To help surgeons with what for most will be a new consideration, the authors offer a starting point as to how to go about it.

Surgery offers the opportunity to help patients with life-threatening or disabling conditions and appeals to our highest motives of altruism and application of our individual talents to better the lives of others. Engaging in research can extend our potential impact beyond those of the patients we treat directly. But are large-scale planetary problems also part of what we need to address to fulfill our mission to improve the health and well-being of our patients? Is this really "our shift"?

Historically the questions given the most attention in medicine and surgery involve treatment efficacy and, to a lesser extent, cost effectiveness. Which treatment options work best, and which give the biggest "bang for the buck"? Surgeons generally are trained that whatever is best for the patient before us is our highest priority. There has been some attention given by policymakers to allocation of resources—who has access to costly treatments and how we might facilitate access to care to those who have less. But for the individual practitioner making treatment decisions, considering factors like which patients should get what resources sometimes has been considered a distraction at best and unethical at worst. The patient before you comes first.

Large-scale problems like climate change have been considered even further removed from our purview as surgeons. While we may care about this issue in our personal lives, our work sphere has seemed a different realm, compartmentalized from this concern. Social and political causes of various types compete for our attention in the limited time we may have outside of the hospital or clinic. Even if we wanted to do something, most of us don't have the know-how, time, or energy to take on this enormous challenge within the context of our surgical professional lives.

But the drumbeat of concern about climate change, recognizing the short window in which we all must take action, grows louder each day.[2,3] Like the growth of a malignant tumor, climate change is building on itself and accelerating; its symptoms are just starting to affect us, but worse is coming.[3] There is overwhelming data-driven consensus among scientists that this is the biggest crisis we face and the biggest public health threat, bar none.[4] Climate change is here, now, and affects the health not only of people far away but of our own patients in our own communities. Those with less feel it the most. Technologic solutions currently in research and development will be essential if we are to pull back from the brink of a largely unlivable planet, but these won't be ready in time over the critical decades in which we practice surgery today. The bridge to those carbon-reducing technologies—"flattening the curve" in order to minimize our losses, to borrow a pandemic allusion—requires stopping or significantly decreasing carbon emissions from all sectors, including ours, now.[3]

And our unwitting contribution to the problem is considerable. The health care sector alone contributes about 10% of all greenhouse gases in the United States, higher than the total emissions of many entire countries.[5,6] The effects of healthcare's contribution to the problem are similar in consequence to all preventable medical errors made in the United States, which have garnered much more attention.[5] Unless clinicians are involved, market forces alone won't reduce our significant contribution to this problem, as incentives currently are not aligned for such changes. Thus, say authors like Misrai et al[1] representing an international collaboration of surgeons and researchers, this problem is our problem, and we can and should take responsibility within our own sphere of influence.

Besides providing a specific analysis of greenhouse gas comparability of these commonly used alternative disposable instruments for prostate surgery, the authors introduce the reader to new terms, like "cradle to gate" analysis, scopes 1, 2, and 3 categorization of organizations' environmental impact, and other basic concepts applicable to becoming more comfortable in this new arena of consideration. This urology example shows surgeons of all disciplines how such analyses are undertaken, what kind of data can be utilized, and how the information provides useful metrics to help with decision-making.

Besides considering effectiveness of our treatments, we also need to start considering the carbon footprint of our choices. While we can't do this with our clinical expertise alone, there are resources available to help us. In this article, a blueprint for how to consider relative carbon costs, in addition to economic costs, is provided for one common procedure, transurethral prostate surgery. The results of their analysis offer some surprises and actionable solutions. For instance, the authors demonstrate that it's not just the disposable instruments themselves, but a significant percentage of the footprint comes from the *packaging*. This is where collective action on the part of surgeons banding together through their professional organizations or hospital network supply chain negotiators can put pressure on manufacturers to decrease the environmental impact of their products, often with relatively simple changes using technologies that already exist, like alternate packaging strategies. In many instances, these changes also can save the manufacturers and the hospitals cost.[7]

Like food labeling for nutritional content and chemical labeling for toxins, environmental impact labeling is beginning to become more standardized and accessible. In this article, the authors demonstrate how such a profile can be obtained when comparing disposable surgical devices. This allows the surgeon

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Disclosure: The authors declare that they have nothing to disclose.

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Annals of Surgery Open (2021) 3:e093

Received: 3 August 2021; Accepted 4 August 2021

Published online 9 September 2021

DOI: 10.1097/AS9.0000000000000093

to take environmental impact into consideration when making decisions. Pressure on device manufacturers to provide such information also can come from organizations at the level of a hospital, healthcare system, or professional society.

It is obvious that environmental considerations won't be the primary way surgeons make decisions. But such knowledge can "tip the scale" towards environmentally preferable choices when other factors otherwise are similar. Besides greenhouse gas generation, disposables contribute a great deal to the dozens of pounds of solid waste per hospitalized patient per day. Other major sources that are relatively easy to modify in the operative suite include choice of anesthetic gases, which vary markedly in their profiles as greenhouse gases and can be a hospital's main on-site source of emissions.[8,9] In many ways, environmental considerations often align with other goals we already consider in our patient care decisions—efficiency, cost, direct health effects, and accessibility.[10]

How does an individual surgeon get started considering these factors? In many hospitals, the alignment of overall health goals and mission is starting to make environmental concerns part of the hospital's considerations and metrics. Major health systems like Kaiser, Cleveland Clinic, and Gunderson Health have created mechanisms and teams to work with clinicians to start down this path. My hospital created a clinician-led Center for the Environment and Health to improve our own processes, education, advocacy, and research. Medical students and residents around the globe also have begun to organize for education and action on climate change and health effects within and beyond the health care sector. Besides improving our own environmental performance, physicians and health care professionals advocating for change at a political level carry considerable weight.

Nobody wants more to worry about during their busy days; nobody asked for climate change. But the choices we make now will affect our patients, our children, and our future, and there are real ways that surgeons working together can have an impact. The article by Misrai et al[1] brings this issue into our everyday focus, raises the bar, and shows us one way to step up to meet this challenge.

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