Department of Neurosurgery (SPM), Department of Anesthesiology and Critical Care (JTC), and Department of Medical Ethics and Health Policy (JTC), University of Pennsylvania, Philadelphia, PA 19104, USA

1 Emanuel EJ, Upshur REG, Smith MJ. What COVID has taught the world about ethics. *N Engl J Med* 2022; **387:** 1542–45.
2 Emanuel EJ, Persad G. The shared ethical framework to allocate scarce medical resources: a lesson from COVID-19. *Lancet* 2023; **401:** 1892–902.
3 Emanuel EJ, Persad G, Upshur R, et al. Fair allocation of scarce medical resources in the time of COVID-19. *N Engl J Med* 2020; **382:** 2049–55.
4 Kinder M. Essential but undervalued: millions of health-care workers aren't getting the pay or respect they deserve in the COVID-19 pandemic. May 28, 2020. https://www.brookings.edu/research/essential-but-undervalued-millions-of-health-care-workers-arent-getting-the-pay-or-respect-they-deserve-in-the-covid-19-pandemic (accessed June 2, 2023).
5 Clapp JT. Keeping bioethics concrete: how social scientific research generates values. *AJOB Empir Bioeth* 2020; **11:** 8–10.

Authors' reply

In response to our Health Policy,[1] James Smith asserts that viewing scarcity as a reality in global health is "problematic and irresponsible". Although scarcity can be mitigated, it is inherent to human life on this planet. Without scarcity there would be no need for principles of distributive justice. What is irresponsible is changing the subject away from how to address scarcity instead of fairly responding to the issue of scarcity. Without effective guidance, well-off people will take the preponderance of scarce resources while others discuss the end of scarcity.

In December, 2020, when COVID-19 vaccines were authorised by the US Food and Drug Administration and the European Medicines Agency, there were only a few hundred million vaccines at first—much less than the 8 billion needed to vaccinate the entire world. Moreover, the number of health-care workers was insufficient to administer the vaccines. There was scarcity among and within all countries, requiring decisions about who would be vaccinated first.

Nowhere do we assume that scarcity is immovable. Had Smith interrogated our five fundamental values, he might have noticed instrumental value—"allocating resources to indirectly realise other values in the future."[1] An example of this value would be prioritising vaccinations of front-line health-care workers to reduce future personnel scarcity. Although scarcity is reducible through coordinated efforts, initial scarcity is inevitable for novel interventions. Smith does not explain how the world could have produced and administered billions of COVID-19 vaccines without a scale-up process and ensuing temporary scarcity. Administering these vaccines inevitably drew personnel and capacity away from other needed efforts.[2] Opportunity costs and near-term scarcities cannot be wished away—they must be addressed through fair allocation.

We agree with Mitchell Berger that ethical values are necessary but not sufficient to ensure fair allocation.[3] First come, first served gave preference to people with internet connections, computer skills, ability to travel, and time to wait—that is, well-off individuals.[3] We also advocated building infrastructure to contact vulnerable groups, such as older individuals with low income who are at higher risk of being hospitalised or dying from COVID-19, to facilitate their receipt of scarce medical resources.[3] As we point out, one of the problems in the USA was the passive allocation of vaccine—requiring people to sign up and travel to mass vaccination sites. We note that the USA's inability to contact patients at high risk proactively and systematically through telephone call, text, or email and schedule them for vaccine appointments caused inequity and failed to realise the ethical principles of allocation.

We also agree with the importance of public engagement and responsiveness. Public engagement must be genuinely representative of the considered judgements of a wide cross-section of the public.[3] Public engagement should not devolve into interest-group policy making, where scarce resources are directed to those who have the best lobbyists, the most intense preferences, or the most time to attend public meetings.

We agree with Berger that resource scarcity can be mitigated. We propose a principle of sustainability, which promotes "the future development of and access to affordable and socially valuable vaccines and therapies".[4]

Stephen P Miranda and Justin T Clapp are correct to identify ethical failures in COVID-19 allocation policies. However, their example of unfair hospital policies that disadvantaged essential health workers is a distinct issue from the allocation of scarce resources. Paying these workers fairly or thanking them for their work would not have diverted lifesaving resources from patients at the highest risk, but prioritising them more highly for vaccines might have.[5]

Rawls observed that "Justice is the first virtue of social institutions, [such that] institutions no matter how efficient and well-arranged must be reformed or abolished if they are unjust."[6] The values we identify present a compelling starting point for assessing the justice of allocation policies, even while the details of institutional reforms should be sensitive to the details of specific health systems and interventions.

We declare no competing interests.

*Ezekiel J Emanuel, Govind Persad
zemanuel@upenn.edu

Healthcare Transformation Institute, Department of Medical Ethics and Health Policy, Perelman School of Medicine and Wharton School, University of Pennsylvania, Philadelphia, PA 19104, USA (EJE); Strum College of Law, University of Denver, Denver, CO, USA (GP)

1 Emanuel EJ, Persad G. The shared ethical framework to allocate scarce medical resources: a lesson from COVID-19. *Lancet* 2023; **401:** 1892–902.
2 Peacocke EF, Heupink LF, Frønsdal K, Dahl EH, Chola L. Global access to COVID-19 vaccines: a scoping review of factors that may influence equitable access for low and middle-income countries. *BMJ Open* 2021; **11:** e049505.
3 McCoy MS, Emanuel EJ. Public engagement in health policy: mapping aims and approaches. In: Lever A, Poama A, eds. The Routledge handbook of ethics and public policy. London, UK: Routledge, 2018: 368–80.
4 Emanuel EJ, Buchanan A, Chan SY, et al. What are the obligations of pharmaceutical companies in a global health emergency? *Lancet* 2021; **398:** 1015–20.
5 Ubel PA. Vaccinating health-care employees—do they all deserve early access? *N Engl J Med* 2021; **384:** e39.
6 Rawls J. A theory of justice. Cambridge, MA, USA: Harvard University Press, 1971.