Vaccine Rationing and the Urgency of Social Justice in the Covid-19 Response

by HARALD SCHMIDT

The Covid-19 pandemic needs to be considered from two perspectives simultaneously. First, there are questions about which policies are most effective and fair in the here and now, as the pandemic unfolds. These policies concern, for example, who should receive priority in being tested, how to implement contact tracing, or how to decide who should get ventilators or vaccines when not all can. Second, it is imperative to anticipate the medium- and longer-term consequences that these policies have. The case of vaccine rationing is particularly instructive. Ethical, epidemiological, and economic reasons demand that rationing approaches give priority to groups that have been structurally and historically disadvantaged, even if this means that overall life years gained may be lower.

As social-distancing measures were implemented across the country in recent months, people differed in their responses. New York City is the nation’s single largest hotspot. It can serve as a useful case study, as it magnifies countless of the dynamics at work in implementing our collective Covid-19 response. As the pandemic unfolded, many affluent people moved to their vacation homes. But many people needed to stay put because their work (whether in formal or informal employment) could not be done remotely or they could not afford not to work. Analyses of transit data at the end of March showed that subway ridership in New York City was significantly reduced, albeit unequally in geographic terms. In Manhattan, which has the highest median household income of the five boroughs at $80,000, morning commute ridership fell by around 75 percent. But in the Bronx, which has the lowest median income at $38,000 and the highest poverty rate of all boroughs, there was only a 55 percent drop. These differences are plausibly explained by differences in people’s ability to prioritize protecting their health over income opportunities. Lower-wage workers are more likely to be exposed to environmental risks associated with more affordable mass transit, and their risk of exposure is oftentimes compounded by less-safe housing and the nature of their formal or informal employment.

Similar disparities can be observed in more directly health-related measures. At the end of April, Covid-19-related deaths were almost twice as high in the Bronx, compared to Manhattan (224 versus 122 per 100,000 residents). Deaths also differed across racial groups. Twice as many Black/African American residents died when compared to white New Yorkers, and Hispanic/Latino people fared almost as badly (127 versus 114 versus 63 per 100,000). When it comes to testing, preliminary analyses suggest that access is the inverse: the vast majority of the thirty ZIP codes that had the highest rates of testing (per capita) were whiter and wealthier (or both), compared to city averages. Along with other data at the national level indicating that low-income communities and communities of color are at higher risk of serious illness if infected, these disparities bear out that historically and structurally disadvantaged populations incur a far larger share of the morbidity and mortality burden while being far less able to absorb financial and other costs.
Insofar as vaccine lotteries are used, at the least, they should be weighed to reflect levels of underlying disadvantage so that worse-off populations stand higher chances than better-off ones. A superior approach would directly prioritize residents of disadvantaged neighborhoods.

It is unclear at what point a vaccine will be available. The U.S. government’s Operation Warp Speed aims to deliver one by the end of 2020, though many experts believe it will take at least two or three times longer. What is clear is that even when a vaccine has been found, production limits will pose another major bottleneck. For some period that seems to be not just a matter of days or weeks, demand will outstrip supply, and rationing will become necessary.

The federal government indicated in the naming of the vaccine production initiative that a timely response to Covid-19 is desirable. Yet the government has not yet adapted existing national pandemic vaccine guidelines that would set out who receives vaccines first. But clarity on who should receive vaccines when not all can is as critical as having a vaccine in the first place.

Across national guidelines and scholarly perspectives, there is consensus that front-line health workers and those deemed essential workers should receive priority. In the absence of clear federal guidance, it seems at least plausible to assume that the group of essential workers will be similar to those identified in the national pandemic guidelines and in state-based characterizations as part of lockdown measures. Essential workers would therefore centrally include those without whom health care facilities would no longer be able to function as required, and likewise comprise critical infrastructure workers (for transport, waste, water, and so forth) and workers in core manufacturing, services, and retail (such as food, pharmaceuticals, and communications). When it comes to the general population, both guidelines and academic commentary are less clear.

Part of the reason is that there is lack of clarity about what principles should guide us in situations of absolute scarcity. Authors of an influential multicriteria model argue that the value of maximizing benefits should be the most important one (and more important than, respectively, treating people equally, promoting instrumental value, or prioritizing the worst off). They view maximizing benefits as constituted by two principles: saving the most lives and saving the most life years. For Covid-19, both principles should receive “the highest priority.” Saving the most life years is supposed to refer to “how long the patient is likely to live if treated.” Roughly, the thought is that when choosing between giving a scarce resource to someone likely to live thirty more years as opposed to someone who is estimated to live only five more years, the former should receive it, as this would contribute to producing more life years.

When it comes to vaccines, the authors note that Covid-19 outcomes have been much worse in older people and that, here, saving the most lives should trump the rationale of saving the most life years. That is, older people should receive priority right after health care workers and first responders. In addition, when supplies are “insufficient for patients in the highest risk categories—those over 60 years of age or with coexisting conditions—then equality supports using random selection, such as a lottery, for vaccine allocation.” Younger people, whom the overall framework otherwise generally favors (as they stand to gain more life years, and societal investments such as education would otherwise be wasted) should be prioritized only if “epidemiologic modeling shows that this would be the best way to reduce viral spread and the risk to others.”

Using a lottery for allocating scarce vaccines in the general population, as proposed here, is one way of treating people equally, and it is certainly superior to a first-come-first-served approach (or, perhaps more accurately, a let-me-use-my-connections-and-pointy-middle-class-elbows approach) that likely explains why better-off and whiter groups typically get tested more frequently for Covid-19 than lower-income people and people of color, as noted above. But a lottery also implies equality at baseline. And when it comes to health and life expectancy, there is no such equality. Life expectancy and health differ widely. In New York City, residents in ZIP code 10044 can expect to live to fifty-nine years. Those in ZIP code 10002 live, on average, to ninety-four. Similarly wide differences are found in many other larger American cities, as well as between better-off suburban residents when compared to poorer inner-city or rural people, and within socioeconomically stratified areas within these regions.

The reasons that some people die thirty years younger than others are, at one level, very easy to understand: a larger number of risk factors such as smoking, obesity, high blood pressure, or higher levels of stress lead to deadly diseases that shorten life, along with unexpected injuries and accidents. At another level, however, it is quite hard to accept that earlier death is not distributed equally across all population
groups but occurs disproportionately in particular racial, ethnic, insurance status, and income groups, all of which closely track geographic area.

The Centers for Disease Control’s 2018 statistics “Health, United States,”18 and the CDC’s Health Disparities & Inequalities Report (last issued 2013)19 provide extensive, detailed, and uncontroversial evidence. For example, while 8 percent of whites lack insurance, 14 percent of non-Hispanic blacks have no insurance, and 27 percent of Hispanics lack it: this means groups differ in their ability to receive health care when they need it. Blacks have a 25 percent increased cancer death rate, compared to whites. People with less than a high school education are twice as likely to have diabetes than those with college or higher education (12 percent versus 6 percent). Four in ten non-Hispanic blacks have high blood pressure, compared to three in ten of non-Hispanic whites (29 percent) and Hispanics (41 percent versus 29 percent versus 28 percent). Asthma is significantly more common among adults with incomes below 250 percent of the federal poverty line than among adults 450 percent above it (49%).

A recent survey complements these data by finding that Hispanic and Black respondents were more concerned than whites about getting infected by Covid-19 and requiring hospitalization (43 percent versus 31 percent versus 18 percent). Likewise, lower-income respondents were far more likely to have this concern than were middle- and high-income respondents (33 percent versus 21 percent versus 17 percent). Blacks were more than twice as likely as whites and Hispanics to personally know someone who has been hospitalized because of or died from Covid-19.20

The Covid-19 pandemic is in the process of assuming generation-defining significance—especially for many of the most vulnerable populations. There is a substantial risk that our current collective response will add to many people—and particularly African Americans’sense that they are “always . . . getting skipped over.”21 So, while a vaccine lottery can be appealing in giving everyone a fair chance at securing a future health benefit (and can certainly be based on promoting equality in this sense), this approach would not reflect the fact that, prior to being entered into the lottery, some population groups would already have received far more of what is to be distributed—health benefits—than others. Nor would a lottery that gives everyone an equal chance be sensitive to the urgent need to avoid, as far as possible, a longer-term impact of our Covid-19 response that could rival the injustices of the Tuskegee syphilis study, the Henrietta Lacks case, and comparable events in the collective memory of many.

Insofar as lotteries are used, at the least, they should therefore be weighed to reflect levels of underlying disadvantage so that worse-off population groups stand higher chances than better-off ones. A normatively superior approach would go further by directly prioritizing residents of disadvantaged neighborhoods.

How, then, do we get the right vaccine to the right person? More or less in the same way as we would send them a letter.

The Area Deprivation Index,22 based on a measure created by the Health Resources and Services Administration and refined and adapted by Amy Kind and her research team at the University of Wisconsin-Madison, does not use ZIP codes as its reference frame but uses American Community Survey data in combining income, education, employment, and housing quality data to rank neighborhoods by socioeconomic status disadvantage. It has already been used to target program delivery of the Everyone with Diabetes Counts initiative, established by the Centers for Medicare and Medicaid Services and the Quality Improvement Organization. Like any measure, it has methodological limitations, and as in many other cases, each unit of analysis will show differences (here: neighborhoods are never completely homogeneous). However, for the present purposes, the perfect should not be the enemy of the good. The ADI is a helpful proxy for identifying those areas where vaccines should first be made available—whether in hotspots like New York City or elsewhere in the country.23 Operationally, what is known as a reserve system can provide administrators with a reference frame to establish priority groups, building on precedent in areas such as school choice and immigration visas.24

Prioritizing people in neighborhoods scoring low on the ADI is ethically fitting, as the measure provides a sufficiently fine-grained composite proxy for the “worst off” that is otherwise unduly recognized (note that the above-cited framework expressly states that “sickest first” should be used only “when it aligns with maximizing benefits”).25 It is the best way of guarding against charges of perceived or real disparate treatment and impact.26 Further, prioritizing the worst off matters in economic and epidemiological terms. Due to lower savings and higher dependency on wages and other income from work, people in lower-income groups are far less able to stay home than wealthier people are.27 When they do, they are much more likely to be sharing their living quarters with several people, often of multiple generations. As the subway example illustrated, lower-income populations are considerably less able to reduce their commutes. While completely understandable in economic terms, epidemiologically, the risk from unabated mobility is that controlling the epidemic becomes even harder—and, conversely, easier, if these groups receive priority access. The case of New York City is no anomaly here: the basic dynamics play out in the same way in other socioeconomically stratified urban, suburban, and rural areas across the United States.28

Arguably, two of the most important general lessons from Covid-19 are to realize the existential importance of universal health coverage and, outside of the health care system more narrowly conceived, to work toward dramatic improvements in social and structural determinants of health. Progress in both areas would reduce the need to consider disadvantage in rationing. Hopefully, one silver lining of the
pervasive fear of a Covid-19 infection that currently grips rich and poor (even if to different extents) is that health policy will be salient in voting booths in years to come. But these more complex and longer-term reforms aside, we must seize the opportunity to allocate vaccines in a way that is both just in the here and now and recognizes the enormous symbolic importance for the collective memory of structurally and historically marginalized groups that comes with being placed first, or last, in line.

In the allocation of initially scarce vaccines, the first-priority group should be health care and other essential workers, particularly those whom epidemiological modeling suggests are more likely to spread the infection due to their work and living profiles. A sad irony is that, in many cases, these groups will often be found in areas with high deprivation, for, as important as we evidently currently deem the services of nursing home aides, garbage collectors, supermarket checkout workers, and others designated essential, their pay often does not reflect this appreciation, and health insurance benefits are typically patchy. When it comes to allocating vaccines among the general population, economic, ethical, and epidemiological considerations urge us to prioritize the worse off, as identified by measures such as the ADI. Rudolf Virchow had it right in every way when he suggested that medicine “is a social science, and politics is nothing more than medicine on a grand scale.”

Acknowledgments

I am grateful for discussion of key points with Moti Gorin and Govind Persad.

1. C. Goldbaum and L. Rogers Cook, “They Can’t Afford to Quarantine. So They Brave the Subway,” New York Times, March 30, 2020.
2. N. M. Kavanagh, R. R. Goel, and A. S. Venkataramani, “Association of County-Level Socioeconomic and Political Characteristics with Engagement in Social Distancing for COVID-19,” medRxiv, posted April 11, 2020, DOI:10.1101/2020.04.06.2005632.
3. R. K. Welthera et al., “Variation in COVID-19 Hospitalizations and Deaths across New York City Boroughs,” Journal of the American Medical Association (April 29, 2020 [publ ahead of print]): DOI:10.1001/jama.2020.7197.
4. “Covid 19: Data,” NYC Health, accessed April 27, 2020, https://www1.nyc.gov/site/doh/covid-19-data.page.
5. N. Hicks, “Most NYC Coronavirus Testing Done in Whitest and Wealthiest ZIP Codes,” New York Post, April 16, 2020.
6. W. Koma et al., “Low-Income and Communities of Color at Higher Risk of Serious Illness if Infected with Coronavirus,” Kaiser Family Foundation, May 7, 2020, https://www.kff.org/disparities-policy/issue-brief/low-income-and-communities-of-color-at-higher-risk-of-serious-illness-if-infected-with-coronavirus/; K-Y Taylor, “The Black Plague,” New Yorker, April 16, 2020.
7. H. Branswell, “Mounting Promises on Covid-19 Vaccines Are Fueling False Expectations, Experts Say,” STAT, May 6, 2020, https://www.statnews.com/2020/05/06/mounting-promises-on-covid-vaccines/.
8. “Interim Updated Planning Guidance on Allocating and Targeting Pandemic Influenza Vaccine during an Influenza Pandemic,” Centers for Disease Control and Prevention, accessed: April 27, 2020, https://www.cdc.gov/pandemic-resources/national-strategy/planning-guidance/index.html.
9. E. J. Emanuel et al., “Fair Allocation of Scarce Medical Resources in the Time of Covid-19,” New England Journal of Medicine (2020) 382(21):2049-2055.
10. Ibid.
11. Ibid.
12. Ibid.
13. Ibid.
14. Ibid.
15. City Health Dashboard, accessed April 27, 2020, https://www.cityhealthdashboard.com/ny/new%20york/city-overview?metric=837.
16. Robert Wood Johnson Foundation online database, “Life Expectancy: Could Where You Live Influence How Long You Live?,” last updated January 2020, https://www.rrwjf.org/en/library/interactives/whereyouliveaffectshowlongyoulive.html?rid=0034400001rlscZAAQ&et_cid=1675803.
17. “Neighborhood Atlas” University of Wisconsin School of Medicine Public Health, Department of Medicine, accessed April 27, 2020, at https://www.neighborhoodatlas.medicine.wisc.edu/.
18. National Center for Health Statistics, Centers for Disease Control and Prevention, “Health, United States, 2018,” at https://www.cdc.gov/nchs/data/hus/hus18.pdf.
19. Centers for Disease Control and Prevention, Health Disparities & Inequalities Report, Morbidity and Mortality Weekly Report, Supplement, 62, no. 3, November 22, 2013.
20. “Health Concerns from COVID-19 Much Higher among Hispanics and Blacks Than Whites,” Pew Research Center, April 27, 2020, https://www.people-press.org/2020/04/14/health-concerns-from-covid-19-much-higher-among-hispanics-and-blacks-than-whites/.
21. A. G. Cuevas, K. O’Brien, and S. Saha, “African American Experiences in Healthcare: ‘I always feel like I’m getting skipped over,’” Health Psychology 35, no. 9 (2016): 987-95.
22. “2015 Area Deprivation Index v2.0.,” University of Wisconsin School of Medicine Public Health, Department of Medicine.
23. Ibid.; City Health Dashboard; Robert Wood Johnson Foundation online database, “Life Expectancy.”
24. P. A. Pathak et al., “Leaving No Ethical Value Behind: Triage Protocol Design for Pandemic Rationing,” NBER Working Paper No. 26951, April 2020, available at: https://www.nber.org/papers/w26951.
25. City Health Dashboard.
26. D. Hellman, When Is Discrimination Wrong? (Cambridge: Harvard University Press, 2008).
27. Kavanagh, Goel, and Venkataramani, “Association of County-Level Socioeconomic and Political Characteristics with Engagement in Social Distancing for COVID-19.”
28. “2015 Area Deprivation Index v2.0.”; City Health Dashboard; Robert Wood Johnson Foundation online database, “Life Expectancy.”
29. R. Virchow, Die Medizinsche Reform (Eine Woehenschrift, Berlin, von Reimer Verlag, July 10, 1848), 2.