

Out of Africa

A Solidarity-Based Approach to Vaccine Allocation

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More than a pandemic, the Covid-19 crisis is a *syndemic*: a convergence of biosocial forces that interact to produce widespread disease. So understood, it calls for justice viewed through a wide-angle lens—for bioethics that cares about more than health systems. One such approach can be developed out of the concept of solidarity, which, fittingly, can be developed from the important African concept of *ubuntu*. Such an approach will prioritize vaccine distribution in low- and middle-income countries.

The “butterfly effect” in chaos theory refers to the widespread and unpredictable effects of changes to an initial set of conditions. The effect is symbolized by a butterfly flapping its wings. The result of the butterfly’s fluttering are changes, far away and days or weeks later, in the timing, formation, and path of a tornado. Like the butterfly’s seemingly trivial act, the humble origins of the Covid-19 crisis have produced repercussions in far-flung locations. The public emergence of the pandemic in December 2019 traces to a tiny microbe making a zoonotic jump in species, probably originating in a bat that led to an infection in an animal intermediary and ended up in a human, probably at a wet market in Hunan, China.¹ Within a matter of months, that single zoonotic jump produced

a global pandemic that has sickened more than 132 million people and led to the deaths of more than two million people.² Like the butterfly that changed the tornado’s course, the tiny microbe upended the lives, livelihoods, and health of people everywhere.

The humble origins of the SARS-CoV-2 virus, the pathogen that causes Covid-19, are paradigmatic of a new era in health: most emerging human diseases are zoonoses and interact with people whose underlying health and social conditions create pathways for disease spread. The SARS-CoV-2 virus emerged when conditions around the world created a “perfect storm.”³ According to findings from the 2020 Global Burden of Disease study, despite sustained improvements in public health in economically developing nations, such as reductions in household air pollution, child growth failure, unsafe water, sanitation, handwashing, and exposure to smoking, progress stalled in economically developed

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nations with respect to fifteen leading causes of disease, including high systolic blood pressure, high fasting plasma glucose, high body-mass index, ambient particulate matter pollution, alcohol use, and drug use. In addition, modern social interconnectedness, characterized by more mobility, urban populations, and interdependence for basic needs and services, increased the channels for rapid transmission of disease. These factors combined with new challenges, such as rising temperatures and associated increases in poverty, to destabilize globally interrelated systems. The nature of the threat humanity faces “means that a more nuanced approach is needed if we are to protect the health of our communities. . . . [N]o matter how effective a treatment or protective a vaccine, the pursuit of a purely biomedical solution to Covid-19 will fail.”⁴

As bioethical debate surrounding the Covid-19 crisis shifts to the topic of vaccine distribution, there is a dire need to recognize that more will be needed than a vaccine offensive against the SARS-CoV-2 virus. One way to characterize the “more” is to say that the Covid-19 crisis is not a pandemic but a *syndemic*, a convergence of biosocial forces that interact with one another to produce and exacerbate clinical disease and prognosis. This emergent conception of health and disease as a cluster of biosocial phenomena “reconfigures conventional historical understanding of diseases as distinct entities in nature, separate from other diseases and independent of the social contexts in which they are found. Rather, all these factors tend to interact synergistically in various and consequential ways, having a substantial impact on the health of individuals and whole populations.”⁵

Although the syndemic framework has diffused across a broad swath of health-related fields since it was first introduced by Merrill Singer and Charlene Snipes in 1992,⁶ it has not been explicitly part of bioethics discourse. Yet the phenomenon that

“syndemic” designates is implicitly included in some bioethics discussions, particularly in public health. Solomon Benatar, for example, indirectly refers to it when he says that, in the modern world, “individual health is increasingly linked to population health, both within and between countries” and urges developing “a coherent language of Public Health Ethics.”⁷ It is only by loosening the grip of a narrower biomedical model that bioethicists can begin to fashion bioethical language and principles that suit the situation the world is now in. Understanding Covid-19 as a syndemic sheds much-needed light on its many synergistic features. As the editors of the *Lancet* explained in 2017, a syndemic conceptual framework spotlights “the social, economic, environmental and political milieu in which a population is immersed.”⁸ A biosocial model sees the virus as interacting in prominent ways with co-occurring diseases that inhabit a social substrate of poverty and inequality. In low- and middle-income countries (LMICs), the social substrate relates to poverty, malnourishment, sanitation, shared housing, and access to basic health care. In high-income countries (HICs), the social substrate includes socioeconomic inequalities and poverty, older populations, obesity, and underlying chronic diseases. These syndemic elements underscore that the ethical distribution of tools against the SARS-CoV-2 virus must pay heed to the virus’s corrosive and unequal effects on different populations. These syndemic features should also prod bioethicists to think about justice with a wide-angle lens, redefining its scope to encompass more than health systems. Such an approach is particularly necessary in considering that SARS-CoV-2 will not be the last syndemic that humanity faces.

Keeping in mind that a vaccine is just one, albeit an important one, of the many tools needed to address syndemic threats, we set forth a solidaristic approach to distributing vaccines against the SARS-CoV-2 virus. Our

aim in this article is not a complete framework to guide all aspects of vaccine allocation. Rather, we set our sights on showing that solidarity is a core value, often missing from bioethical debates, that must be brought into play when making global vaccine allocation decisions. Drawing on the sub-Saharan African ethic of *ubuntu*, we elaborate the ideas of syndemic and solidarity and argue that these ideas lend support to global health alliances to distribute vaccines beyond national borders. We end by introducing ethical criteria to guide global distribution, emphasizing the importance of prioritizing LMICs, which have the least ability to obtain vaccines on their own, and people who are at high risk of infection or of severe disease and death.

Throughout the article, we refer to “African ethics” to indicate moral views that are recurrently espoused by sub-Saharan Black peoples and a body of intellectual reflection on these views. Clearly, the views we identify are not held by all sub-Saharan Black people, and some people outside sub-Saharan Africa espouse them. What makes them “African” is that they spring from African soil, in particular from small-scale communities in pre-colonial Africa. We draw on African ethics because we are convinced that it brings important insights that can help with urgent questions about allocating scarce Covid-19 vaccines. We also are committed to engaging diverse global perspectives when addressing problems that are global in scope and issuing recommendations that apply to all the nations of the world.

Key Concepts for Our Time

The Covid-19 syndemic. “Syndemic” is more apt than “pandemic” to name the crisis the world is facing because it points to the synergistic nature of health and social conditions that give rise to it. The prefix “syn” designates “with” or “together” and speaks to the myriad ways in which multiple elements in-

teract with one another to create the crisis. Characterizing the crisis as “syndemic” helps us frame a fitting response. As Singer and Scott Clair note, “[When] the ways people—both healers and sufferers, as well as the larger community—think about health and illness change, . . . the ways they *respond* to sickness change as well. From an applied standpoint, a nosology’s value lies in its capacity to provide guidance for mobilizing effective responses in prevention and treatment.”⁹

Combating syndemic threats requires not only controlling a pathogen but also addressing its interactions with co-dwelling pathogens and with a range of social, economic, and other contextual features that allow the pathogen to flourish. Consider tuberculosis: poverty increases the likelihood of exposure to the bacteria that causes TB due to overcrowding in poorly ventilated dwellings. Moreover, “poverty and discrimination place the poor at disadvantage in terms of access to diagnosis and treatment for TB, effectiveness of available treatments because of weakened immune systems, and ability to adhere to TB treatment plans because of structurally imposed residential instability and the frequency of disruptive economic and social crises in poor families.”¹⁰

Like TB, the SARS-CoV-2 virus does not exist in a vacuum. Yet the initial focus within bioethics was not the syndemic nature of Covid-19. Instead, early debates, particularly in HICs, focused on questions related to allocating life-saving resources, such as ventilators and intensive care unit beds. Later, the focus shifted to highlighting social injustice, race, and unequal access to life-saving health care. Meanwhile, in much of the world, where access to these technologies is nonexistent, other questions were emerging.¹¹ For example, in May 2020, nearly three months after the first case of Covid-19 was recorded on the continent, ten African nations had no ventilators, and another forty-one African nations shared

two thousand working ventilators among hundreds of millions of people. When it came to intensive care unit beds, the situation was roughly the same: Malawi, for example, had just twenty-five intensive care unit beds for a population of 17 million. Across many LMICs, the most pressing challenge the Covid-19 pandemic presents is access to soap and water. According to UNICEF, worldwide, 40 percent of people do not have handwashing facilities with water and soap in their home, and 43 percent of schools lack such facilities; in sub-Saharan Africa, 63 percent of people reside in urban areas without access

to handwashing.¹² Other factors in LMICs that exacerbate the spread and adverse effects of the SARS-CoV-2 virus include interrelated conditions of malnutrition, widespread poverty, crowded living and working conditions, and difficulty accessing basic health care. The intersection of poverty and the Covid-19 syndemic reached a turning point in April 2020 after lockdown measures were imposed across Africa. Writing in *Al Jazeera*, a group of African intellectuals called on leaders of African nations to lift “brutal lockdowns” and give reprieve to people in “chronic precarity.”¹³ They noted that, unlike their leaders, many Africans have no means to safely store food during a lockdown because they lack refrigerators; others lack the means to purchase food for storage and to survive from one day to the next. As Siddhartha Mukherjee observes, the cause of death during the Covid-19 crisis differs from a whodunnit mys-

tery with a single culprit—“one murder, one murderer, one weapon.” Instead, multiple forces conspire together, as in “a long-planned act of collective revenge.”¹⁴

In HICs, the rich person’s corollary of soap and water is the epidemic of obesity and associated conditions, like diabetes and heart disease. Other co-occurring conditions include aging populations and glaringly deficient long-term care facilities that serve primarily older clientele; discrimination, such as racism, that leads to chronic and toxic stress and produces social and economic conditions that put some groups at increased

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risk from Covid-19; substance use issues, such as opioid use disorder and vaping of nicotine or tetrahydrocannabinol; and socioeconomic inequalities, with those on the bottom rung struggling with homelessness, food insecurity, and lack of access to basic health care. Additionally, across both HICs and LMICs, social gatherings are a key contributor to the spread of Covid-19, whether they take place at bars or restaurants, places of worship, birthday parties, funeral services, or college dormitories.

Multicausal models of disease can make the task of crafting an ethical approach to vaccine distribution daunting. How do we set priorities for preventive measures and access to diagnostics, therapeutics, and vaccines in a way that takes into account the range of co-occurring health and social factors that influence risk? We propose deploying vaccines strategically to people living with co-occurring diseases under conditions in

which a confluence of social, economic, political, and other features makes it more likely that the SARS-CoV-2 virus will thrive. The now familiar means of closing off pathways for the spread of the novel coronavirus consist of behavioral interventions, such as masks, handwashing, and physical distancing, combined with testing and contact tracing. Vaccines are an extension of such efforts. Due to initially limited availability, pathways for their use must be chosen carefully. When determining distributive priorities, we ought to heed the syndemic conditions that create pathways for viral spread. SARS-CoV-2 exploits pathways that share many common features around the globe, with distinctive elements in some contexts as well. Table 1 summarizes prominent pathways in LMICs versus HICs.

An ethic of solidarity. If mounting an effective defense against the Covid-19 syndemic requires targeting vaccine distribution strategically to the environments the virus exploits, it makes sense to draw on ethical values that speak to syndemic conditions. Far better suited to this task than the ethic of respect for individual autonomy, which takes center stage in Western bioethical analysis, is an ethic of solidarity. Broadly speaking, solidarity involves the interrelatedness of human beings and the

mutuality of ethical duties that spring from this. Even before the Covid-19 crisis, an ethic of solidarity was “visible in its absence” from bioethics debates.¹⁵ But though an ethic of solidarity has not yet established itself as a front-runner bioethics principle, it has a long history in European countries, with a tradition of national insurance systems that afford universal protections against the impact of disease, old age, and unemployment. Within bioethics, it finds defenders in the United Kingdom, including the Nuffield Council.¹⁶ An ethic of solidarity has been applied to specific domains, such as global health research, public health ethics, global health inequalities, genetic databases, and biobanks.

An ethic of solidarity can gain insights from sub-Saharan African ethics, which features solidarity among its central values. Indeed, the idea of solidarity itself suggests that the form this value takes in Africa and throughout the world should receive close attention.

The African concept of solidarity, unlike approaches that appeal to voluntary choices to assist others,¹⁷ encompasses both descriptive and normative elements. The descriptive component is conveyed in terse sayings such as “*Motho ke motho ka batho; umuntu ngumuntu ngabantu*”

(“A person is a person through other persons”).¹⁸ The central idea is that, as human beings, we have a “fundamentally relational character,” in the sense that we “[do] not voluntarily choose to enter into human community”; rather, community is a given.¹⁹ As emerging infectious diseases increasingly pose syndemic threats (along with threats to human health from other sources, such as climate change), we will increasingly be bound together by our shared vulnerability to disease and, more positively, by our shared desire to be healthy. Our lives in this sense have a fundamentally relational character, and our existence presupposes a microbial environment compatible with life and human health.

Solidarity as conceived in an African framework is also aspirational and normative. The aspirational aspect calls on individuals to uphold, as a human ideal, values such as “kindness, generosity, compassion, benevolence, and respect and concern for others; in short, any action or behavior conducive to the promotion of the well-being of others.”²⁰ The normative aspect prescribes acting for the good of others and the community, not just out of simple altruism, but because one’s own good is intrinsically bound to theirs. The Akan people of Ghana illustrate this by the

Table 1.
Prominent Pathways for Transmission of SARS-CoV-2 in LMICs and HICs

<i>Low- and middle-income countries</i>	<i>High-income countries</i>
Widespread poverty	Economic inequalities and associated poverty
Lack of access to basic health care resources	Lack of health insurance, lack of access to affordable care
Malnourishment	High body-mass index
High population density, crowded living or working conditions	Congregate populations
Lack of access to basic sanitation	Aging populations
Co-occurring diseases (such as HIV/AIDS, malaria, tuberculosis, hypertension, and diabetes)	Co-occurring diseases (such as diabetes, cardiovascular disease, chronic obstructive pulmonary disease, and substance use disorder)

Figure 1.

Funtunfunefu-denkyemfunefu



saying, “*Se amma wo nyenko eentwa akron a wo so irrenta du*” (“If you do not allow your neighbor to have [to reach] nine, you will not have [or reach] ten”).²¹ Solidaristic practices thus reflect more than just a “shallow coalition”²² of those willing to serve others because they expect payback. Unlike standard liberal conceptions of justice, which are grounded in an agreement between prudent individuals seeking to balance their competing interests, solidarity highlights a sense of responsibility toward others and the community of which one is a part. This is symbolized by the Akan Adinkra symbol of conjoined crocodiles with two heads and one stomach, called “*funtunfunefu-denkyemfunefu*” (shown in figure 1). The image illustrates the thought that, even though people can have conflicting interests, they are one. Ultimately, they live off a shared stomach, their well-being and survival inextricably linked.

One way of further expressing the African notion of solidarity is to say that, “[i]n this morality, duties trump rights.”²³ In other words, each individual is responsible for showing concern for others’ interests and cultivating values that enhance communal life (such as compassion, solidarity, reciprocity, and cooperation), not because others have rights or claims against us, but because others are among us, as parts of our group. John S. Mbiti expresses this idea by saying, “Whatever happens to the individual happens to the whole. . . , and whatever happens to the whole . . . happens to the individual.”²⁴ This understanding foregrounds the we-ness that bonds a solidaristic group.

It might be countered that this type of solidarity cannot extend to the whole of humanity. Yet we stress that it must. The global scope of the Covid-19 crisis puts humanity’s shared vulnerability on display. Although nations around the world do not all share the same economic and social conditions, and people within nations do not all share the same levels of safety and risk, all humanity is vulnerable to the novel coronavirus, and all who become infected with it can become sickened and die. It is this similarity that forms the basis for an ethic of solidarity, an ethic that relies on persons show-

sponsibility. Becoming a person in the African sense requires concerted efforts in which human beings participate in communities to realize or perfect distinctive facets of their humanity. According to Ifeanyi A. Menkiti, human beings “become persons only after a process of incorporation” and “during the long process of attainment, the community plays a vital role”; so understood, “personhood is something at which an individual could fail, at which they could be competent or ineffective, better or worse. Hence the African emphasized the rituals of incorporation and the overarching necessity of learning the

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ing “similarity in a relevant respect” and considering themselves “to have something in common with the others who matter in a specific situation.”²⁵ Although solidarity can be used for various ends, at its core, it is an ethical value, teaching that shared humanness is a relevant similarity; this similarity forms the basis for the we-ness of solidarity. While there are multiple solidaristic groups, there is also an overarching solidarity among humanity.

A broader value that underpins solidarity in African ethics is ubuntu. The Nguni word for “humanness,” “ubuntu” is typically translated by scholars of African philosophy as coming closest to the English word “dignity,” but a better translation might be “human dignity.” In African philosophy, *human dignity* suggests a shared responsibility to ensure that no one falls beneath the minimum threshold of what would be considered human personhood.²⁶ Personhood, a foundational concept, is understood as a social and relational attribute for which the group, as well as the individual, bears re-

social rules . . . so that what was initially biologically given can come to attain social self-hood, i.e., become a person.”²⁷

During the Covid-19 syndemic, an overarching solidarity among all humans should be a core value guiding vaccine distribution. Regardless of how cohesive or divisive solidaristic groups are, what marks them off from nations that band together to promote their own ends is that they see their national interest as caught up with the interest of all humanity. Calling upon an overarching solidarity does not mean silencing diverse populations or squashing conflicting opinions. Being in a solidaristic union to contain the spread of the novel coronavirus does not entail subscribing to the same religion or even the same political party. Instead, it calls forth a recognition that “*I am because we are.*”²⁸

Global Distribution of a Vaccine

Translating these core concepts and values into criteria for dis-

tributing Covid-19 vaccines begins with a rejection of vaccine nationalism—the view that each nation should invest only or mostly in its own citizens. The syndemic features of the current crisis render this way of thinking obsolete. Nationalism is at odds with the African solidaristic moral framework, which, as Kwasi Wiredu explains, underscores the belief that *onipa na obia* (“human fellowship is the most important of all human needs”).²⁹ The Akan adage “humanity has no boundaries” enjoins a wide embrace of all human beings, which Kwame Gyekye elaborates by explaining its meaning in a Ghanaian context:

When the farmer cultivates his land, he does it up to a limit, an edge (in the Akan: *nhanoo*, *eduge*, boundary) where he has to stop, otherwise he would trespass on another farmer’s land. There is, thus, a limit to the area of cultivation of land. But this, the maxim invites us to realize, is not so in the cultivation of the friendship and fellowship of human beings; the boundaries of *that* form of cultivation are limitless. For, humanity is of one kind; all humankind is one species . . . a shared humanity—the relationships among whose members ought to feature a certain kind of morality: the morality of a shared humanity.³⁰

A move toward instantiating an ethic of solidarity was made by COVAX, the global partnership (coled by the World Health Organization; a public-private partnership known as Gavi, the Vaccine Alliance; and the Coalition for Epidemic Preparedness Innovations) that aims to accelerate and equitably distribute vaccines against the SARS-CoV-2 virus. Like an insurance policy, COVAX covers participants by investing in multiple vaccines to hedge its bets and promising countries that sign on first access to potential future vaccines. It attracts richer nations to invest by reducing their risk of betting on the

wrong vaccine candidates, and it supports poorer nations by subsidizing or paying in full for vaccines. Solidarity, applied at a global level, affords the ethical underpinning for COVAX’s approach, even when crass nationalism can explain a nation’s motivation to participate.

A skeptic might ask why a wealthy nation with plenty of vaccines in the pipeline and the capability to vaccinate its own people should partner with other nations. To see the folly of a go-it-alone view, consider one hypothetical way it could play out. Suppose that, one year after the first Covid-19 vaccines became available, most HICs claim that they have won the race and reached herd immunity. Some LMICs have achieved herd immunity, too, with support from global partnerships, yet many remain unprotected. The virus has replicated and mutated in these unprotected regions, and a highly virulent strain, immune to the most commonly used vaccines, emerges in South Africa. Although nations around the world rapidly seal their borders, the new variant is soon reported on four continents, and delays in identifying, sequencing, and sharing the new strain result, not just in a setback for South Africa, but in a global calamity.

This is just an imagined future, but it is not far-fetched. First, the track record to date for global distribution of Covid-19 vaccines is dismal. In January 2021, some HICs had secured enough doses of the Covid-19 vaccine to cover their entire populations many times over, while South Africa had secured just 22.5 million doses for a population of 60 million people.³¹ Second, there are already multiple, fast-spreading variants of SARS-CoV-2, and the mutants have spread to dozens of countries. New variants can threaten population-level immunity by reducing the efficacy of vaccines and immune responses triggered by past infections.

This hypothetical case of South Africa carries lessons for all nations. One lesson is that it is deceptive to think of global alliances like COVAX

as charitable, existing solely for the benefit of poorer nations. It is not just that South Africa stood to benefit from the world’s help; the world could benefit from South Africa’s help. What if South Africa refused to cooperate and share information about the SARS-CoV-2 virus variant? Such an action would not be without historical precedent. In 2006, Indonesia’s health minister, Siti Fadilah Supari, stopped sharing samples of a highly pathogenic avian influenza virus with the WHO after an American company, Baxter, developed a vaccine derived from Indonesian samples without providing Indonesians access. In contrast to charity, which sees “us” helping “them,” solidarity sees a “we” and recognizes a shared fate. During the Covid-19 syndemic, the world has seen firsthand what it means to share fate and “how quickly a disease you’ve never heard of in a place you may have never been can become a public health emergency right in your own backyard.”³² Viruses like SARS-CoV-2 reveal for us a natural world, sans borders. They put on display how we are “connected biologically by a microscopic network of germs and particles—and that, like it or not, we’re all in this together.”³³ This more natural world, which we all inhabit, underpins our interdependency and forms the basis for a collective “we.” Globally interconnected nations instantiate the ontological dimension of solidarity conveyed in the Adinkra symbol of conjoined crocodiles.

Yet interconnected relationships are not necessarily solidaristic, as the Indonesia example attests. Animals roaming the Serengeti are interconnected; yet their relationships are purely predatory: lions and hyenas slaughter and devour zebras. Relationships qualify as solidaristic only if they include an ethical dimension, which is cooperative, rather than competitive, and symbiotic, rather than predatory. The ethical dimension comes to light if we shift from thinking about the race to vaccinate populations as a national race and

think instead of a global race, with all nations part of the same team, which is all humanity. Humanity is competing together against a powerful rival, represented by the novel coronavirus and its mutant strains. Since rich countries can cross the finish line without help, the first priority should be the poorest nations on the team, who are least able to reach it. The next priority should be middle-income nations, because even if they need less assistance than poorer nations, they still need some assistance. Wealthier nations still need to cross the finish line themselves; thus, they should continue to take care of their own citizens even while they extend a hand to LMICs.

Does a solidaristic approach demand that we abolish a global system where countries vie for vaccines and buy them directly from manufacturers? Our answer is that even if a morally best world required this, the world we live in is far from that ideal. Our aim should be a *morally better* world. A morally better world shows awareness of the syndemic nature of the Covid-19 threat and acts in solidarity. It prods rich nations to join global alliances, like COVAX, and to share a portion of their doses. It places moral constraints on bilateral agreements that COVAX-participating nations strike on the side by requiring transparency. A better world nudges wealthy nations toward joint agreements that help, rather than hinder, global efforts. Examples are agreements that generate new vaccine candidates and grant COVAX first-refusal rights and agreements that increase vaccine knowledge and share standardized technical and clinical data. A better world must do more. While COVAX has secured agreements for 2 billion doses of Covid-19 vaccines in 2021, those agreements meet just 20 percent of the vaccine needs of participating countries, leaving 80 percent of people in participating countries unprotected. Current forecasts show that, at the current rate, there will not be enough vaccines to cover the world's popula-

tion until 2023 or 2024.³⁴ A better world is reflected in a proposed international treaty committing nations to undertake coordinated efforts to improve global pandemic preparedness. The proposal, set forth by the WHO and leaders of nations, calls on all countries to “seize this opportunity and come together” for a common good “in the spirit of solidarity and cooperation.”³⁵

Criteria for Global Distribution

Once global health alliances like COVAX have vaccines to distribute, what criteria should they use?

Solidarity steers global distributors toward three salient priorities: people with low access to vaccines, people with high risk of infection, and people with high risk of severe disease and death.

A syndemic and solidaristic approach aims to win the global race against Covid-19 together and therefore focuses strategically on how the lethality of the crisis results from a confluence of factors and on how to shut down viral pathways. For this reason, it prioritizes vaccines for populations with relevant co-occurring diseases and with salient social, economic, and cultural vulnerabilities known to invite viral spread. First, prioritizing LMICs, which have less ability to obtain vaccines, should figure prominently in global distribution. From a syndemic standpoint, this criterion shuts down viral pathways that SARS-CoV-2 can otherwise exploit, while from a solidarity standpoint, it extends a hand to members of a group who would otherwise lag and moves the whole group closer to the finish line. Next, prioritizing people at high risk of infection is warranted because people vulnerable to disease are more likely to offer a pathway for spread of the SARS-CoV-2 virus than those at lesser risk. From the

perspective of solidarity, when my group, which is all humanity, is at high risk of infection, then I remain at risk, too, because I exist as part of that group, not by choice, but as a given. Finally, people at high risk of severe disease and death merit priority from a syndemic perspective because if they contract the virus, they will be sicker for an extended period, giving the SARS-CoV-2 virus more time for viral evolution and within-host mutation. This can exacerbate the syndemic by exposing others to highly mutated, potentially dangerous strains of virus shed late in the course of the disease.³⁶ Ethically, safe-

guarding people at high risk of severe disease and death reflects a sense of ubuntu, the value that underpins solidarity. The ethic of ubuntu bids each member of a group to respect the dignity of every other.

How should global distributors think about priority to health care workers? Most global allocation frameworks prioritize this group.³⁷ The ethical bases for doing so is that health care workers play a vital role during a health emergency by caring for the sick and they have a higher risk of infection because they are in close contact with many infected patients.³⁸ In the context of LMICs, a further basis for prioritizing health care workers is scarcity. For example, the Covid-19-related death of James Gita Hakim, a cardiologist and HIV researcher at the University of Zimbabwe, was a loss not just to family and friends but also to Zimbabwean medicine: in 2018, Zimbabwe had just 0.2 physicians per one thousand people. (By comparison, there were 6.4 in Lithuania

Table 2.
An African Solidaristic Approach to Global Vaccine Distribution

<i>Criteria</i>	<i>Syndemic features</i>	<i>Examples</i>
Low ability to obtain vaccines	Economic conditions	Bolivia, Honduras, Haiti
High risk of infection	Population density, sanitation, crowded living or working conditions	Rwanda, Burundi
High risk of severe disease or death	Comorbidities, aging populations, insufficient health care resources	South Sudan, Central African Republic, Liberia

and 4.6 in Israel during the same year.)³⁹

Yet a solidaristic framework points to other considerations that tell against priority to health care workers. First, in LMIC settings, many workers supplying vital services face higher risk than do health care workers; among these are food sellers, market women, hawkers, and public transport operators in crowded metropolises. Not only do these groups regularly come into contact with hundreds of people, but they are also less well equipped with public hygiene supplies and less knowledgeable about using them. Prioritizing health care workers seems to be at odds with standing in solidarity with these workers. Second, putting health care workers first penalizes the poorest nations because they have the weakest health care systems and fewest health care workers. Thus, if global allocation were proportional to the number of people employed in the health care system (as opposed to, for example, home-based caregivers or traditional healers), then the poorest nations would fare the worst. While these concerns do not establish conclusively that health care workers should not be prioritized, it suggests that syndemic and solidaristic reasons for prioritizing them are weak. During later phases of distribution or based on other values, health care workers might nonetheless merit priority.

The above analysis suggests that solidarity steers global distributors toward three salient priorities: people with low access to vaccines, people

with high risk of infection, and people with high risk of severe disease and death. Since the recipients of global distribution are nations, this means that nations whose representative members meet these criteria merit priority. Nations with the least access to vaccines would include most LMICs. In Latin America and the Caribbean, for example, representative citizens in Bolivia, Honduras, and Haiti have less access to vaccines than do people in HICs. High risk of infection is present in many of the world's island nations, which are among the most densely populated nations. In 2017, Bangladesh was the most densely populated country, with 1,252 people per square kilometer.⁴⁰ It was also among the poorest. Bangladesh would rank higher than other poor nations whose populations are largely rural, such as Namibia, which has just three people per square kilometer. Other examples of nations at high risk of infection include those with inadequate sanitation, such as Rwanda and Burundi.

Lastly, nations at high risk of severe disease and death include those without resources to treat critically ill patients. For example, in March 2020, when the Covid-19 syndemic began, there were only four ventilators in South Sudan to treat a population of 11 million, three in the Central African Republic, and six in Liberia (one of which was located at the U.S. embassy).⁴¹ Table 2 summarizes the analysis of this section and sets forth an African solidaristic approach to global vaccine distribution.

Multiple Challenges

Efforts to implement our proposal would face multiple challenges. These challenges reflect the fact that more than a vaccine offensive is needed to combat global health problems.

First, many LMICs lack data to reliably determine risk for severe disease and death. For example, LMICs may lack a national health registry that shows the percentage of their population with type 2 diabetes. Many LMICs also lack reliable national vital statistics to determine the number of people in a certain age group because people born at home may not obtain officially recorded certificates of birth.

Second, many poorer regions lack the infrastructure to store, distribute, or administer Covid-19 vaccines. Even when the infrastructure exists, diverting resources to Covid-19 vaccination risks collateral damage. A cautionary tale was the Ebola virus disease outbreak in the Democratic Republic of the Congo in 2019, when more measles deaths were reported than deaths from Ebola virus disease due to a failure to maintain adequate measles vaccination.⁴²

Finally, vaccine refusal renders vaccination difficult. Consider Pakistan and Afghanistan, where, in 2019, polio vaccinators were turned away, shot, and killed.⁴³ This was partly due to the spread on social media of false rumors—a concern also emerging with Covid-19 vaccination efforts. While vaccinators should not be deployed under unsafe conditions,

failed efforts to deliver vaccines is not only a tragic setback for directly affected nations but also a syndemic threat. This was apparent in 2019, following failed efforts to vaccinate Pakistanis against polio, when a sewage sample in a bordering province in Iran tested positive for the strain of polio circulating in Pakistan.

Ethics for a Syndemic Age

Globalization permeates virtually every aspect of modern life. As the Covid-19 crisis amply attests, the butterfly effect becomes a “butterfly defect” when we mismanage global connections or ignore global interdependencies.⁴⁴ To address this, the distribution of Covid-19 vaccines should be global in scope and should be designed to address the features of a syndemic. It should prioritize LMICs, which have the least ability to obtain vaccines on their own, and countries facing a high risk of infection and high risk of severe disease and death. Such an approach would reflect, we have argued, the African ethic of solidarity.

Making the world safer against SARS-CoV-2 is a monumental undertaking. Yet it is only a start. Covid-19 shows us that we live in a syndemic age. Bioethics can contribute by offering up a fitting response to the global interconnectivity of health. The bioethical principle of respect for individual autonomy, born in the aftermath of the Second World War, was a fitting response to egregious violations of individual rights that involved experimenting on people without their knowledge or consent. But it will not serve well as a response to syndemics.

Notes

1. We follow the findings reported March 26, 2021, by the WHO in “Origins of the SARS-CoV-2 Virus,” which states that “[a]ll SARS-CoV-2 isolated from humans to date are closely related genetically to coronaviruses isolated from bat populations” and that “spillover from an animal source to humans happened during the last quarter of 2019” ([https://apps.who.int/iris/](https://apps.who.int/iris/bitstream/handle/10665/332197/WHO-2019-nCoV-FAQ-Virus_origin-2020.1-eng.pdf)

[bitstream/handle/10665/332197/WHO-2019-nCoV-FAQ-Virus_origin-2020.1-eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/332197/WHO-2019-nCoV-FAQ-Virus_origin-2020.1-eng.pdf)).

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