Making the World Safer and Fairer in Pandemics

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Abstract

Global health has long been characterized by injustice, with certain populations marginalized and made vulnerable by social, economic, and health disparities within and among countries. The pandemic only amplified inequalities. In response to it, the World Health Organization and the United Nations have embarked on transformative normative and financial reforms that could reimagine pandemic prevention, preparedness, and response (PPPR). These reforms include a new strategy to sustainably finance the WHO, a UN political declaration on PPPR, a fundamental revision to the International Health Regulations, and negotiation of a new, legally binding pandemic agreement (popularly called the “Pandemic Treaty”). We revisit the cavernous shortcomings of the global Covid-19 response, explain potentially transformative legal reforms and the ethical values that underpin them, and propose actionable solutions to advance both health and justice.

Essay

Even before the Covid-19 pandemic, the prevailing narrative in global health was one of a deep sense of injustice, with large marginalized and vulnerable populations being left behind as a result of social, economic, and health disparities within and among countries. The pandemic amplified these challenges, not only in health but also in other indicators of human well-being, including income, housing, and education. Many of the inequitable effects of Covid-19 were stark and intensified some of society's worst impulses, including hoarding lifesaving countermeasures and imposing travel restrictions on populations that identified emerging pathogenic threats. Director-General Tedros Adhanom Ghebreyesus of the World Health Organization described the resulting inequity as a “catastrophic moral failure.”

While the pandemic has cost the global economy at least US$13.8 trillion, lower-income countries experienced larger losses and longer-lasting economic setbacks. Global public-private partnerships formed to mitigate inequalities, including the Access to Covid-19 Tools Accelerator and its vaccine pillar, COVAX, along with the World Bank's Pandemic Fund, fell woefully short of delivering on expectations despite the tireless efforts of so many who sought to improve well-being and create a fairer world.

Global health is now at the most pivotal moment in its modern history (since the WHO's founding in the aftermath of World War II). The United Nations and WHO have embarked on transformative normative and financial reforms that could reimagine pandemic prevention, preparedness, and response (PPPR). These reforms include a new strategy to sustainably finance
the WHO; a UN political declaration on PPPR; a fundamental revision to the International Health Regulations (IHR); and negotiation of a new, legally binding pandemic treaty, or agreement.

One of us, Lawrence Gostin, is actively involved in WHO processes for a pandemic agreement and IHR reform. Gostin is the director of the WHO Collaborating Center on National and Global Health Law and a member of the WHO Review Committee regarding amendments to the IHR. In this essay, we revisit the cavernous shortcomings of the global Covid-19 response, explain these potentially transformative legal reforms and the ethical values that underpin them, and propose actionable solutions to advance both health and justice.

Such a historic moment in global health governance will not come again for generations. It is vital to adopt bold norms now—before memories of this pandemic fade and life returns to normal, a normal that will inevitably be interrupted by a new storm.

**What Went Wrong: The Collapse of Global Governance**

The IHR\(^2\) have been the primary governing instrument for international pandemic preparedness and response since the founding of the WHO. Its member states revised the regulations in 2005 after the SARS epidemic, but the IHR largely failed to fulfill their mandate during the West African Ebola epidemic and were inadequate to cope with the Covid-19 pandemic.

Although nearly every country in the world is party to the regulations, there has been widespread noncompliance and exploitation of loopholes. Prior to Covid-19, two in three countries had failed to build IHR core health system capacities for rapid detection and response,\(^3\) a predictable result since the IHR merely set expectations, contain no meaningful independent assessment or monitoring mechanism, and do not sufficiently incentivize capacity building. The regulations require the signatories to promptly report events that may evolve into a public health emergency of international concern (PHEIC) and to provide the WHO with accurate and detailed information; yet China delayed sharing initial outbreak data about Covid-19 and provided an inaccurate picture of the transmissibility of the virus. Because the IHR grant the WHO no authority to enforce compliance or to enter national sovereign territory to investigate the outbreak's origin and progression, uncertainty and disagreement about the virus's origins remain, despite evidence that SARS-CoV-2 likely originated in one or more naturally occurring zoonotic spillovers in Wuhan.\(^4\)

The IHR empower the WHO to issue temporary recommendations following the declaration of a PHEIC. Although compliance is voluntary, countries must furnish evidence-based reasons when they eschew the guidance. Unsurprisingly, states largely ignore WHO recommendations, including those to avoid discriminatory bans on travel to and trade with countries reporting even the suspicion of an outbreak.

Not only is this a critical shortcoming; it exacerbates, rather than remediates, punitive behavior. The regulations lay out an early warning system: a protocol to alert the global community via the
WHO of emerging health threats and thereby create norms of rapid reporting and solidarity to snuff out catastrophic disease outbreaks that threaten everyone. In reality, the IHR have had the opposite effect: Mexico and South Africa, which reported new strains of H1N1 and SARS-CoV-2, respectively, found themselves, not lauded for rapidly fulfilling their IHR obligations, but instead isolated, with other nations discouraging their citizens from travel to and trade with those countries. As one commentator laconically put it after the Omicron variant was identified, “South Africa: Last in line for vaccines, first in line for travel bans.”

Zoonotic pathogens, which account for more than 70 percent of all new and emerging diseases, are occurring with increasing frequency, enhancing the risk of new pandemics. Researchers estimate that the probability of extreme epidemics will increase threefold in the coming decade. However, the IHR contain no obligations for states to mitigate zoonotic risks, including in the realms of deforestation, industrial agriculture, wet markets, and the wildlife trade. For most government leaders, these compound risks are out of sight, out of mind until catastrophe is on the doorstep. Addressing these challenges requires a multisectoral One Health approach, encompassing the health of humans, animals, and our shared environment.

But perhaps the greatest dereliction of responsibility was the international community’s failure to act in solidarity against a common threat through the equitable distribution of the earliest supplies of lifesaving countermeasures, including personal protective equipment, vaccines, treatments, and diagnostics. The IHR’s obligation for states to cooperate is amorphous and unenforceable, meaning that countermeasures were shared on the basis of excess supply and charitable goodwill alone—goodwill that was often lacking. High-income countries hoarded global supplies of countermeasures and implemented export controls on crucial materials, leading to stark inequities between rich and poor nations.

COVAX—the multilateral vaccine procurement and distribution mechanism—was heralded as a beautiful idea born out of solidarity and has delivered two billion doses to date, but it was supposed to reach that milestone twenty months sooner. By the time COVAX was adequately funded, higher-income countries, which possessed superior liquidity and risk tolerance, had purchased the lion’s share of the early supply, and exporting countries issued restrictions of key countermeasures. More than marking a shortcoming in solidarity, COVAX highlighted the inadequacies of principally relying on donation-based partnership models to advance equity.

The Global Health Architecture Is Transforming

Since the WHO was founded in the aftermath of World War II, there has never been a more consequential opportunity to fundamentally restructure the global health governance architecture. Failure now may foreclose major reforms for the foreseeable future.

A new pandemic agreement. In March of 2021, twenty-five heads of state and international agencies issued an extraordinary joint call for a new international treaty for pandemic preparedness and response. The “main goal would be to foster an all-of-government and all-of-society approach, strengthening national, regional and global capacities and resilience to future pandemics.” The World Health Assembly charged an Intergovernmental Negotiating Body with drafting and negotiating the agreement. The Assembly declared equity the agreement’s core
principle, though other values, such as transparency and solidarity, were and continue to be critical components. A new pandemic agreement grounded in equity and with robust financing and accountability mechanisms could be transformative. Yet the gulf between high- and low-income states has been significant, with the African bloc in particular losing trust in their negotiating partners from Europe and the United States.

The key sticking point is between the sharing of scientific information and the equitable distribution of the products resulting from that scientific exchange. High-income countries want binding obligations to promptly share novel pathogens and associated genomic sequencing data to enable the rapid development of effective therapies. While low- and lower-middle-income countries (LMICs) acknowledge the importance of scientific sharing, they point to a continuous practice in which resources found within their borders are extracted for the benefit of other populations, and they perceive that withholding pathogen samples and genomic sequencing data may be their only diplomatic leverage to compel a fair apportionment of countermeasures for their own populations.

This tension has manifested in several ways. First, LMICs favor temporary intellectual property (IP) waivers, which the pharmaceutical industry and the German health minister recently said was a nonstarter. Second, LMICs want a multilateral pathogen access-and-benefits-sharing system, which would obligate countries to share pathogens and genomic sequencing data but also require life sciences companies, laboratories, and other researchers to provide in-kind contributions of resulting countermeasures. This system could share some of the same features as the WHO's current pandemic influenza preparedness framework. Skeptics note that this framework has not been crisis tested and that pathogen sharing does not necessarily lead to the development of products to be shared. Finally, LMICs want new binding norms that require high-income governments and manufacturers to transfer technology and know-how to enable local and regional manufacturers to develop lifesaving tools. Developing regional capacity to develop and manufacture lifesaving countermeasures will also require building capacity. The WHO is supporting an mRNA network, centered in Cape Town, South Africa, to develop mRNA technology, but the center's vaccine took longer to develop than it otherwise would have if pharmaceutical companies, researchers, and states had shared their know-how.

Relatedly, LMICs have been pushing for the inclusion of the principle of common but differentiated responsibilities, which has its origins in international climate change law and is grounded in the notion that higher-income countries should bear greater responsibility to address and remediate global warming because their economic development resulted from dirtier forms of energy. The corollary is that, while all countries have a duty to contribute to pandemic preparedness, high-income countries have the resources to develop countermeasures against a common pathogenic foe and therefore have greater responsibility to assist developing countries to build core PPPR capacities. However, the current negotiating draft has removed the language of common but differentiated responsibilities that was present in previous ones.

**The International Health Regulations.** Concurrently, WHO member states are negotiating sweeping revisions to the IHR for a vote in May 2024. Starting with the United States, the WHO's member states have proposed more than 300 amendments, thus demonstrating near unanimity in the desire to improve the IHR. The key advantage of the IHR over a pandemic
agreement is that these regulations already have 196 state parties, including the United States. It is highly unlikely that even a fraction of that number will sign and ratify a new pandemic agreement. And depending on the legal structure, President Biden might have to gain Senate approval—a monumental task. Most IHR proposals are targeted to systemic failures during the Covid-19 pandemic that we highlighted above: they aim to strengthen the WHO’s authority to compel production of information concerning emerging disease threats, require states to collect and share disease surveillance data, transform the WHO’s temporary outbreak guidance into binding rules, gain access to states’ sovereign territories to investigate novel outbreaks, and gather “unofficial” information sources from scientists, health workers, and social media without interference or concurrence by the country where the threat is emerging. Several states have argued that the IHR’s current alert level—a PHEIC—is determined too late to trigger an effective pandemic response and to mobilize financing; they propose “intermediate” or “regional” alert levels that would trigger an earlier and surgical response.

Bold norms, of course, have little impact if states do not comply and are not held accountable, and so countries have proposed independent periodic assessments of states’ core health system capacities. Accountability is one area where the United States and the African bloc align. They have both proposed “compliance” or “implementation” committees, whose function would be to boost adherence to new IHR norms.

The regulations’ scope currently does not extend to equity, apart from article 44, which requires states to “collaborate with each other, to the extent possible,” including financial and technical assistance; and this article has not been utilized explicitly. As with the pandemic agreement, the African region is advocating for a more overt focus on equity. The region proposed binding obligations to provide countermeasures, arguing that these have “the most potential to deliver against equity challenges.” They also proposed a new “Financial Mechanism for Equity in Health Emergency Preparedness and Response” that would strengthen health systems; support domestic research, development, and manufacturing; and address identified inequities that if left unaddressed could affect responses to declared public health emergencies.10

Critically, the IHR and International Negotiating Body workstreams are designed to complement one another and complete their work at the same time. Assuming that the World Health Assembly adopts both, the WHO should design a strategy that maintains coordination and make sure that the public understands the need for each regime and identifies their differences, mutuality, and overlaps.

**UN political declaration on PPPR.** To build high-level political support for both IHR reforms and a pandemic agreement, the UN General Assembly for the first time ever, in September 2023, held a high-level meeting on PPPR at which it adopted a political declaration.11 This declaration recognized the catastrophic failures to prepare for and respond equitably to the Covid-19 pandemic.

While nonbinding, UN political declarations can be influential. They represent the highest level of international political commitment and can build consensus on language that can harden, or become binding, in further legal instruments and customary international law while also catalyzing civil society action. Over the past two decades, the UN General Assembly has adopted
political declarations on HIV/AIDS, noncommunicable diseases, tuberculosis, universal health coverage, and antimicrobial resistance.

Although important to promote awareness and build solidarity, the political declaration on PPPR missed an opportunity to strengthen governance through concrete UN-led multisectoral actions, targets, and accountability mechanisms. It included almost no measurable commitments except to hold another high-level meeting in September 2026, by which time negotiators in Geneva are scheduled to have concluded their mandates, and certain mechanisms of the pandemic agreement will have been launched. Moreover, whereas global leaders had called for strong norms and measures to operationalize equity, such as support for new end-to-end mechanisms for countermeasures,¹² the declaration deployed aspirational language, “urging” states to provide equitable and timely access to countermeasures and to “promote” technology transfer—merely reinforcing the status quo relying primarily on voluntarism.

**WHO sustainable financing.** For decades, governments have starved the WHO of predictable and sustainable funding commensurate with its global mandate. Fifty years ago, fully flexible assessed contributions—states’ membership dues—made up 80 percent of the WHO’s revenue. But by 2022, the percentage of assessed contributions had shrunk to 16 percent of the agency’s budget, meaning that the WHO was forced to rely on voluntary contributions from a small set of wealthy government and private donors, with the majority of these voluntary contributions earmarked according to those donors’ preferences. As a result, the WHO’s critical but unglamorous activities, including standard setting and talent acquisition, have been grossly underfunded. This funding situation creates a fundamental misalignment between the WHO’s resourcing and areas identified as needing urgent attention, such as mental health, noncommunicable diseases, and injuries.¹³

In 2022, member states adopted the recommendations of the Working Group on Sustainable Financing, chief among them a phased increase to member states’ assessed contributions, giving the WHO greater certainty over its finances.¹⁴ Tied to these funding increases were the WHO’s own commitments on governance reforms to enhance transparency, accountability, and efficiency. Member states began to implement the reforms in 2023, agreeing to raise assessed contributions to the equivalent of 26 percent of the WHO’s 2022-2023 base budget.¹⁵ This is the first in a series of increases that could see assessed contributions rise to 50 percent of that base budget by 2030.

The Assembly also permitted planning for an investment round in 2024, which may include a replenishment conference designed to raise voluntary contributions for the agency’s core responsibilities. Much debate focused on whether donors would be permitted to earmark their contributions, but a broader funding base is central to the WHO if it is to fulfill its constitutional mandate as the directing and coordinating authority on health, including any new responsibilities given to it through the parallel PPPR reform processes.

**Ethical Values in Pandemic Reforms**

While the reform efforts described above are primarily legal in nature, several core ethical values underpin them, with equity being most salient. Operative ideas of equity appear closely aligned
with distributive justice. IHR and pandemic-agreement reforms, if successful, could create obligations to allocate medical products to those most in need rather than based on current structures that favor populations that can wield economic might or political power. Theories of distributive justice vary considerably, but at their heart is the need to remediate inequitable allocation of resources—in this case, resources needed to facilitate fair opportunities for good health.

The WHO defines health equity as “the absence of unfair, avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically or by other dimensions of inequality.” However, even within the WHO's ecosystem, ideas surrounding equity are a moving target, as evidenced by a series of notable evolutions to the definition in multiple pandemic-agreement drafts. Key to any remedial action is a commitment to go beyond mere aspiration to tangible mechanisms to achieve equity.

To be sure, equity is not the only value in play when it comes to improved public health outcomes. The following values often operate in harmony with equity, but not always, and can lead to perplexing policy choices:

**Balancing international solidarity and sovereign duty.** A standard definition of “solidarity” is elusive. One conception is that it involves “public action” that signals “positive identification with another and their position, whether individual or group, driven by sympathy and understanding.” Another perceives solidarity as involving “shared practices reflecting a collective commitment to carry ‘costs’ (financial, social, emotional, or otherwise) to assist others.” The draft pandemic agreement defines it as “effective national, international, multilateral, bilateral and multisectoral collaboration, coordination and cooperation to achieve the common interest of a safer, fairer, more equitable and better prepared world to prevent, respond to and recover from pandemics.” And, however the concept is defined, there is consensus that there was a collapse of global solidarity during the pandemic.

What drives national policies to aggressively—many say unfairly—hoard countermeasures is the duty that political leaders have to their own citizenries, particularly to protect their health and safety. Related to this is the legal principle of state sovereignty, that no state “has the right to intervene, directly or indirectly, for any reason whatever, in the internal or external affairs of any other state,” a concept also incorporated into the pandemic agreement.

The tension between global solidarity and mutual responsibility, on the one hand, and sovereign rights and duties, on the other, has animated government responses to health emergencies. It was brought into stark view when India imposed an export prohibition on the vaccine manufacturer Serum Institute of India, forbidding it for several months from fulfilling COVAX’s bona fide vaccine orders. New Delhi took this extraordinary action as the Delta wave roiled through the Indian populace, and political leadership determined that Serum’s countermeasure production was needed domestically. Serum’s chief executive officer (CEO) noted that he had no choice: it was either comply with the prohibition or have his firm nationalized. In an emergency setting, politicians accountable to their people and CEOs accountable to their regulators and
shareholders—by duty in many legal systems—may quickly find themselves replaced when they take action adverse to sovereign or corporate responsibilities.

Furthermore, it is one thing to express solidarity in safety and peacetime. It is quite another to band together in the fog of emergency where solidarity is tested. For example, when the H1N1 pandemic began to unfold, many high-income countries agreed to provide a share of their vaccine supplies to the WHO but then delayed fulfillment until they had excess supply.\textsuperscript{24} It remains to be seen whether the lofty rhetoric of the political declaration on PPPR and the binding but distinctly amorphous commitments of the revised IHR and new pandemic agreement will hold during the next global pandemic.

**Responding swiftly to a crisis while acting responsibly.** One of the great successes in the Covid-19 response was the speed at which vaccines and therapeutics were created. It usually takes a decade or more for a new vaccine to move through the stages of research and development, clinical trial testing, manufacturing, and distribution, but several Covid-19 candidates received emergency-use authorization within one year and full approval a few months later. (The previous record was four years for the mumps vaccine.)

Both Operation Warp Speed in the United States and the COVAX Facility internationally were designed with speed in mind. With Operation Warp Speed, government incentivized innovation by guaranteeing vaccine purchases long before the products were tested or authorized, thus significantly de-risking industry's barrier to entry. Indeed, these public investments helped companies dedicate the resources required to rapidly develop a range of viable candidates.

The other side of the coin is that, when taxpayers bear most, or all, of this risk, public benefit ought to be a major consideration when these investments pay off. There are good reasons, based in both equity and global health protection, to give preference to populations most in need. Advocates in many contexts pushed for purchase agreements to contain obligations for manufacturers to make their products affordable and available in LMICs, which could have promoted more equitable distribution. However, there is scant evidence that governments landed any of these commitments despite their leverage to do so.

Years of work and investment provided the running start needed to achieve swift authorization. The mRNA technology underpinning the Pfizer-BioNTech and National Institutes of Health-Moderna vaccines took decades to develop, from mRNA's discovery in the 1960s to Katalin Karikó and Drew Weissman's Nobel Prize-winning work on mRNA interactions with the immune system to NIH's discovery that gene-based vaccines can be safe and effective.\textsuperscript{25} The success of team-science innovation, largely funded by the NIH and the U.S. federal government, underscores the responsibility of the public and private sectors to likewise take a team approach to wide availability and uptake.

**Balancing community welfare with personal autonomy.** Much of public health law boils down to the balance between affirmative measures to protect community health with restrictions on personal autonomy. The field of public health law involves the study of “the legal powers and duties of the state, in collaboration with its partners, to ensure the conditions for people to be
healthy and of the limitations of the power of the state to constrain for the common good the autonomy, privacy, liberty, proprietary, and other legally protected interests of individuals.”

In the United States, state and local government’s broad public health authority found expression in a landmark 1905 Supreme Court case, holding that “in every well-ordered society charged with the duty of conserving the safety of its members the rights of the individual in respect of his liberty may at times, under the pressure of great dangers, be subjected to such restraint, to be enforced by reasonable regulations, as the safety of the general public may demand.” In early 2020, government mandated many public health measures, including masking, physical distancing, and vaccinating. The startling invasion of a little-understood virus, coupled with the plentiful horror of overrun hospitals, convinced many Americans to heed these mandates despite the economic and social hardships that resulted.

As to be expected, solidarity and tolerance of public health measures waned, and, for some, competing values and fears became more urgent. Many people reclaimed their lost personal autonomy by reopening their business sites, attending their schools and places of worship, and retying social bonds. Some governments agreed even as other community members, particularly those with aggravating health conditions, bemoaned the danger to them. These governments concluded that continued public health mandates had become disproportionate to the benefit. The same Supreme Court in 1905 recognized that there is a “sphere within which the individual may assert the supremacy of his own will and rightfully dispute the authority of any human government, especially of any free government existing under a written constitution, to interfere with the exercise of that will.”

Indeed, the trade-offs are complex, and people of good faith and varying circumstances can disagree on the appropriate balance. Social media is rife with claims that the IHR and pandemic agreement will compel states around the world to take away personal freedoms. Many specific claims are unfounded and just feed into nationalist narratives and agendas. Still, when one considers the strengthened provisions of the IHR, including new powers for the WHO to enter sovereign territory, individuals can legitimately ask what authority is being delegated to an entity that, for them, is impersonal, faceless, and remote. Ultimately, countries are not compelled to adopt the IHR or the pandemic agreement, and it will be up to those that do to determine, through their own domestic lawmaking processes, how and in what manner to make treaty commitments flow down to private actors. The main point here is that the best way to contain transnational outbreaks is through international cooperation, led multilaterally through the WHO. That may require all states to forgo some level of sovereignty in exchange for enhanced safety and fairness.

**Transparency and accountability.** To be trusted, health institutions need to operate in a way that permits the public to assess what they are doing and the basis for doing so. This is not always the case. For example, criticisms of WHO decision-making in the pandemic’s early stages were aggravated by accusations that the closed-door reviews of the Covid-19 IHR Emergency Committee could not be evaluated. To be sure, decision-makers need some private space to deliberate. But ensuring adequate transparency helps develop public trust and understanding, which so many institutions need to generate.
Accountability mechanisms are similarly important. Strong democracies hold regular elections to allow citizens to replace flawed leadership, and they have enforcement systems to deter unlawful activity among the populace. Internationally, accountability mechanisms are more difficult to construct and often rely on countries’ making commitments, assessing each other on how reliably they follow through on them, and then predicting the likelihood that they will adhere to new obligations. If the Geneva processes do result in legally binding commitments, they will not be meaningful unless it is believed that nations will abide by them even when it is inconvenient to do so. The current pandemic-agreement draft simply punts, leaving it to the Conference of the Parties to develop accountability structures by 2025.

**Respect for human rights.** The pandemic saw widespread human rights violations, from stifling political and social activism to inequitable access to countermeasures. Yet 171 countries are party to a treaty that affirms “the right of everyone to the enjoyment of the highest attainable standard of physical and mental health” and “to enjoy the benefits of scientific progress and its applications.” The pandemic also exposed and exacerbated deep structural inequities, with disease outcomes and control measures disproportionately impacting heroic frontline health care workers as well as the most impoverished and vulnerable among us—despite interpretive guidance that the same treaty requires affirmatively safeguarding the rights of disadvantaged, marginalized, and vulnerable people.

Human rights have been inadequately integrated into pandemic preparedness and response mechanisms, and in a manner that makes it unclear how to operationalize them. For example, the IHR require states to have “full respect for the dignity, human rights, and fundamental freedoms of persons” and to address the human rights of travelers, but how these obligations are to be actualized is up for grabs. While advocates have pressed for health-related human rights to be included in the pandemic agreement, the current draft does not do so. The full and meaningful participation of civil society and essential public health actors at all levels of pandemic planning and response would be a good start, as would incorporating affirmative human rights obligations into the new pandemic agreement and specific strategies to align conduct to those commitments.

**The Way Forward**

The challenge in any reform effort is to develop mechanisms that move past the polemics and wishful thinking into real methods containing the behavioral incentives to deliver for populations and vulnerable groups. The criticism that underlies many of the initiatives detailed above is that they could turn into paper exercises generating little improvement for those too often left behind.

Making our world safer and fairer in pandemics requires us to design and maintain mechanisms that promote the creation, availability, and uptake of effective countermeasures when and where they are needed, and our current modes have not achieved this. Redesigning our system with equity in mind requires investment in regional research, clinical trial networks, and manufacturing capacities to spread and diversify countermeasure development. It also requires thinking carefully about the role of IP protection specific to the pandemic context and how and when IP rights are exercised.
Equity also requires preparation and hard work. Many institutions were ill prepared for SARS-CoV-2's sudden onset and were reacting from a standing start. There is much to admire about the COVAX model, for example, and its next iteration could be more effective by securing funding commitments and liquidity now and diversifying its procurement sources. It is also important to shift away from overdependence on international charity. LMICs can become more secure if they possess the capacity and know-how to produce medical products domestically or regionally. But that takes planning, funding, and imagination.

Relatedly, substantial leadership to secure adequate and reliable pandemic defense funding is needed. The World Bank's Pandemic Fund has an annual goal to raise $10 billion but has raised less than $2 billion. That is less than the cost to run a major research hospital, much less buttress global preparedness and response. And funding can't be one-off; it must be predictable and sustainable. WHO member states have taken important policy steps to shore up the organization's resources, but follow-through is the real test. Involving ministers of finance—often peripheral players in global health discussions—in these conversations can help make the financial case that an ounce of prevention really is better than economic catastrophe.

Finally, commitments across the ongoing governance reforms—no matter how strongly worded—will be meaningless without real, durable accountability mechanisms. The Global Preparedness Monitoring Board advocated a universal, periodic, objective, and external review process to assess country compliance with the IHR. The United States and African Union proposed standing committees comprised of IHR state parties to monitor and facilitate accountability. Mechanisms need not be punitive and should include positive incentives, for instance, by linking compliance with financial and technical assistance. These mechanisms also must lead to remediation, learning, and further reform. Assessing and reassessing are evergreen efforts.

The millions of lives and trillions of dollars lost to Covid-19, along with the cavernous health disparities, demonstrate the need to renew how the world handles novel outbreaks, particularly if we desire more equitable and fairer outcomes. We are at an inflection point. Humanity must not forget the devastation a pernicious virus caused, devastation that drove leaders to push for fundamental reforms in the first place.

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