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Ending the COVID-19 Pandemic Requires More International Collaboration

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Overview: Global scientific collaboration to find a vaccine is not enough to end the pandemic. International cooperation is also necessary to produce a successful vaccine affordably and distribute it equitably worldwide. Commercial and national interests threaten to thwart the universal immunization needed to curtail the pandemic. International institutions such as the World Health Organization are essential to the solution.

Keywords: COVID-19, Vaccine, collaboration, globalization, techno-nationalism

By definition, pandemics are global problems, and this is all the more so in our interconnected world that relies on the incessant and fluid movement of goods, services, and people. Global cooperation is essential to find treatments and vaccines for COVID-19, but the current response has exposed several limits of international collaboration. While collaboration has been intense in the initial research phase, techno-nationalistic tensions are growing. The limits to the global innovation system are apparent as governments jockey for preferential access to potential vaccines, and commercial priorities such as pricing and intellectual property rights place the pharmaceutical sector at odds with globally optimal outcomes. An optimal outcome—that is, returning the world to its pre-crisis levels of efficiency—requires that any potential vaccine be universally available, and not limited to wealthy countries and individuals. Global supply

chains are ubiquitous, and countries that remain impaired by the pandemic will slow down the recovery. Since we cannot stop the cross-border flow of people, universal vaccination is necessary to prevent future outbreaks. For epidemiological reasons alone, a large-scale, near simultaneous immunization across countries is essential to achieve herd immunity—generally considered to be 60 percent of the population—and curtail repeated outbreaks (Gates 2020).

The scientific community has long recognized that only simultaneous global access to the vaccine will halt the pandemic, but some countries are pushing to prioritize vaccination of their own citizens. Likewise, pharmaceutical companies may push to prioritize their own interests, favoring more affluent countries and segments of society, especially in the absence of a globally binding agreement for equitable access.

Defeating the pandemic will require fast global deployment once a vaccine becomes available. The international community needs to find an effective way to enable rapid deployment of the vaccine for the global public good. We believe that the World Health Organization (WHO) will need to play a pivotal role, in conjunction with influential multi-stakeholder partnerships such as the Global Alliance for Vaccines and Immunization (GAVI) and the Coalition for Epidemic Preparedness Innovations (CEPI).

The Global Scientific Community: A Leader in International Collaboration

The scientific research community's remarkable collaborative efforts demonstrate the benefits of a highly interconnected world. Just a few months after the outbreak, a global medical innovation ecosystem emerged to share information and resources across borders to fight the pandemic. As in previous pandemics, the WHO has played a key coordinating role from the earliest stages, acting as a global hub to accelerate the collaborative development of diagnostics, therapeutics, and vaccines.

In parallel, several non-profit international research partnerships have contributed substantially to coordinating the global response (Table 1). These multi-stakeholder partnerships, established over the last two decades, have addressed infectious diseases such as malaria, ebola, and the bubonic plague. They reacted early to the COVID-19 pandemic by directing their energies to combine complementary knowledge, resources, and capabilities, and secure additional streams of research funding. CEPI aims to raise \$2 billion to find at least three viable vaccine candidates; by May 2020 it had already raised \$750 million. GAVI also made \$200 million available to help lower-income countries respond quickly to the pandemic. Many national governments have allocated a growing share of their incremental research budgets for COVID-19 research to these global partnerships rather than assigning them to individual research labs (Organisation for Economic Co-operation and Development 2020a), which has created a more coordinated global response.

-- Table 1 near here / 1. 5 col --

The adoption of open science practices has also facilitated international scientific collaboration (Organisation for Economic Co-operation and Development 2020b). In

January 2020, more than one hundred institutions, including journals, funding bodies, and foundations, agreed to share research data and findings relevant to the pandemic (Wellcome 2020). They committed to providing immediate open access to relevant peer-reviewed publications, making research findings available via preprint servers, and sharing research results immediately with the WHO. Since then, thousands of articles and data have been published in open access repositories. Innovative approaches to share relevant intellectual property are also being explored (Chesbrough 2020).

International Collaboration Beyond Science

While international scientific collaboration has flourished, many challenges and barriers beyond the research stage remain. The biggest challenge now is: How do we achieve an equitable global deployment of viable vaccine(s) to prevent future outbreaks that includes economically vulnerable populations? The threat of “vaccine nationalism” is intensifying as some countries try to secure preferential access to the vaccine for their citizens, while others maneuver to protect the interests of their pharmaceutical industries (Knaus 2020). The race for the vaccine also involves other countries (mainly European countries and Japan), but it is particularly intense between the US and China, reflecting a combination of national health considerations, business interests, and national pride (Milne and Crow 2020). These techno-nationalistic motivations test the limits of global collaboration, as national political and economic priorities threaten to outweigh the greater global public and social good.

Unless a COVID-19 vaccine gets treated as a global public good, the pandemic will not recede. However, an agreement regarding the mechanisms to achieve that objective remains elusive. The most logical solution is for the WHO, or a similar multi-stakeholder organization, to acquire the intellectual property of the vaccine, and prioritize the most vulnerable, regardless of nationality. Under the World Trade Organization’s Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), national governments are entitled to exercise “compulsory licensing” of a patent if deemed critical to protect the health of their citizens. Such rights are likely to extend to a multilateral organization. However, there is no guarantee that national governments will agree to co-finance a global compulsory license. Given differing national priorities, individual countries or coalitions of nations may adopt a free-riding approach, or may prefer the outputs of “local” research consortia. Also, while the discussion on pricing and licensing rights presumes that there will be just one successful treatment, various trials running in parallel may prove successful—for instance, for different population subgroups. Finally, national regulatory agencies would need to synchronize “fast-track” regulatory approval, but countries may demonstrate a bias towards particular solutions.

Manufacturing and distribution challenges are also significant. We do not know how vaccine development programs can be designed to optimize rapid scale-up, while maintaining safety and efficacy standards (Hosangadi et al. 2020; Khamsi 2020). The entire world’s vaccine-manufacturing capacity would need to be mobilized quickly to produce billions of vaccine doses. A staggered roll-out of the vaccine—as is most likely—across territories and target populations, will require advanced project

management and supply chain management resources, particularly where acute logistical challenges exist in countries with weak public health infrastructures.

Equitable Distribution of a Vaccine

Responding rapidly to COVID-19 and limiting its socio-economic implications will continue to require cooperation of an unprecedented global scope. The pandemic will also require creative regulatory, organizational, and financial solutions, possibly combining different instruments such as compulsory licensing, patent pools, advanced market commitments, a global purchasing system, price controls, and blended finance (Khamsi 2020; Yamey et al. 2020).

At this stage, more unanswered questions than answers exist. Although a simultaneous global rollout of a pandemic vaccine is impractical, it is important that the ability to pay should not drive availability. We need international collaboration to establish globally accepted guidelines to ensure equitable distribution that considers epidemiological and medical factors. Such guidelines should also prioritize “essential” workers and the most vulnerable groups on a global basis.

Several proposed scenarios could achieve an equitable distribution. The WHO created the “Access to COVID-19 Tools (ACT) Accelerator” in April 2020 as a global collaboration agreement that includes the WHO, CEPI and GAVI, among others, to accelerate the development, production, and access to new COVID-19 therapeutics and vaccines. Unfortunately, the US government’s May 2020 decision to terminate its relationship with the WHO may impede the organization’s capacity to lead. While other nations and philanthropies such as the Bill & Melinda Gates Foundation moved quickly to reduce the financial gap from this decision, the US’s unwillingness to accept WHO leadership poses a significant challenge to global immunization efforts (Maxmen 2020).

Addressing this crisis requires stronger collaboration among national governments and coordinated political leadership globally. No efficient alternative exists to the multilateral governance approach needed to create efficient production and distribution systems. Globalization generates tensions between commercial interests, national agendas, and global societal interests (Petrevicic and Teece 2019). These tensions expose the underlying contradiction between the sovereignty and interest of nation states and the borderless world shaped by growing interdependence of the scientific community and economic actors (Narula 2003).

An international organization can build consensus, coordinate global efforts, and act as an honest broker. CEPI or GAVI are able to help build political consensus, however, we believe the WHO is in the best position to implement any agreement. The WHO has a large physical organization with offices in more than 150 countries, and access to the United Nations’ complementary resources. The UN’s resources have been integral to managing previous pandemics and epidemics. Building an alternative international organization with the necessary resources is not practical on such short notice. A bottom-up approach cannot work either, because even if a vaccine’s intellectual property is free, only a few countries outside the developed world have the expertise and equipment

needed to mass produce a vaccine affordably. Even fewer countries have the institutional and technical expertise to monitor and regulate the quality or the price. Each country will need an extensive public health organization to distribute the vaccine, which currently doesn't exist in many poorer economies.

Coordinated global efforts will be necessary for worldwide distribution of a COVID-19 vaccine. Geopolitical tensions and techno-nationalistic inclinations may hamper these much-needed efforts. Ultimately, we believe the WHO is in the best position to coordinate any initiative and help stop the pandemic's spread.

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Table 1.—Key multi-stakeholder partnerships addressing COVID-19

Name	Year Created	Partner Organizations	Declared Mission
Coalition for Epidemic Preparedness Innovations (CEPI)	2017	Bill & Melinda Gates Foundation, Wellcome, and several nations	Financing and coordinating the development of vaccines against emerging infectious diseases
Global Research Collaboration for Infectious Disease Preparedness (GloPID-R)	2013	Research funding organizations from various countries	Facilitating effective and rapid research of infectious diseases with pandemic potential
International Severe Acute Respiratory and Emerging Infection Consortium (ISARIC)	2011	Global federation of clinical research networks	Providing a proficient, coordinated, and agile research response to outbreak-prone infectious diseases
Global Alliance for Vaccines and Immunization (GAVI)	2000	Various multilateral organizations, philanthropies, pharmaceutical firms, and several nations	Creating equal access to vaccines for children in developing countries