

*A Global Public Health Convention
for the 21st Century:*

TO PREVENT THE NEXT PANDEMIC



MESSAGE FROM JULIO FRENK

The COVID-19 pandemic has reminded us of our vulnerability as human beings, our interconnectedness as a global family, and the impact of our actions on other species with whom we share the planet. As we have unfortunately come to recognize, the global community is not secure without shared responsibility and mutual accountability for global health security. Moreover, no single nation on its own, not even the most powerful, can mitigate or control the threat posed by pandemics.



The partnership between the AIDS Healthcare Foundation and the University of Miami generates objective evidence to support their ambitious vision for the future. I applaud the work of the Panel for a Global Public Health Convention and the support of the research team for this thorough review of global reactions and policies around the present pandemic.

The roadmap within this report will serve to inform needed improvements in public health policy at the global, regional, national, and local levels. This, in turn, holds great promise in galvanizing the global public health security framework against common contagious disease threats.

While the world's recovery is proving to be long and complex, it also presents tremendous opportunities for revitalizing the global health architecture. This will require that we all do our part to support science-based approaches that keep society safe and allow us to prevent, prepare for, and respond to future pandemics.

Julio Frenk, M.D., Ph.D., M.P.H.
President, University of Miami

MESSAGE FROM MICHAEL WEINSTEIN

COVID-19 has been a painful reminder that the global public health system is in serious disrepair. Despite the destruction of trillions of dollars in wealth in this pandemic, the nations of the world are still unwilling to make the investments necessary to prevent and respond to global health security threats.



Rather than COVID having inspired more transparency, accountability, and coordination, we have seen every country doing their own thing. Unfortunately, we have not learned the lessons that the pandemic of AIDS should have taught us. The keys to preventing and responding to pandemics must be full transparency, accountability, and coordination. Just as we waited years to make the HIV cocktail available to patients in the developing world resulting in millions of unnecessary deaths, the rich countries have hoarded and overcharged for COVID vaccines.

This report shines a light on the urgent changes that are needed to protect humanity from infectious diseases. AIDS Healthcare Foundation hopes that this report will help to persuade opinion leaders and decision makers to change direction and embrace fundamental change.

Our collaboration with the University Miami has been of invaluable assistance in bringing thought leaders together and stimulating a conversation that is so long overdue and desperately needed.

Michael Weinstein

President, AIDS Healthcare Foundation

Since 2014, the AIDS Healthcare Foundation has been internally discussing the idea of a new global public health convention to prevent, prepare for, and respond to pandemics. In 2015, it joined forces with Harvard University and the London School of Hygiene and Tropical Medicine to evaluate the global response to Ebola (The Lancet, 2015).

In 2016, the AIDS Healthcare Foundation signed a memorandum of understanding with the University of Miami to create the AHF Global Public Health Institute to promote policy research in global health. In Fall 2019, the AHF Global Public Health Institute provided a grant to the University of Miami to develop a strategy to prepare the world for the next public health emergency of international concern, based on the global experience, successes, limitations, and failures of the responses to Ebola, Zika, SARS, MERS, HIV, TB, Malaria, among many other global health threats.

Much to our surprise, our intentions in the fall of 2019 were unfortunately prescient. A novel coronavirus was announced to the world in the last days of December 2019. Later named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus sparked coronavirus disease-19 (COVID-19) outbreaks globally. The WHO declared COVID-19 a public health emergency of international concern (PHEIC) on January 30, 2020. On March 11, 2020, COVID-19 was given pandemic status.

In its third year, SAR-CoV-2 is still spreading throughout the world, spawning variants in its wake. A patchwork of successful and unsuccessful policies about containing the virus, sometimes implemented and other times mere political announcements, along with insufficient vaccine production resulting in unequal vaccine access throughout the world, have prevented containing the COVID-19 pandemic. These varied and frequently uncoordinated responses now have caused nearly 7 million deaths, with the WHO estimating 15 million and others 18 million COVID-19 deaths that could have been prevented. The resulting uneven recovery, punctuated by SARS-CoV02 variates and sub-variates, resulted in economies of many nations reeling and millions of people impoverished.

The University of Miami study was published in the *Lancet Public Health* (Duff et al., 2021). The purpose of this report is to present the results of that study in greater detail. It calls for a global framework convention that could help every nation prevent, prepare for, and respond to outbreaks and epidemics in a more systematic way to prevent their becoming pandemics.

Having a global treaty or convention could help the world to contain outbreaks—in part through transparency, coordination, global monitoring of data, sharing of vaccine manufacturing knowledge, and accountability. If we are going to prevent pandemics, we need a different global governance architecture that has these functions. Low-income countries will need to receive the funding required to bring their capacity to prevent outbreaks to a level that would permit them to protect the world from a pandemic. Nations that do not comply with the proposed binding legal instrument or convention could face equitable and just sanctions. Only by implementing a new governance approach will we be able to prevent not only outbreaks from becoming pandemics, but also emerging and re-emerging diseases, neglected tropical diseases, and harmful variants from emerging.

The recommendations of our *Lancet Public Health* report were included in a listing of recommendations by various august groups in the *WHO Dashboard of COVID-19 related Recommendations* (2022). In recognition that writing a report was insufficient to mobilize countries and international bodies toward a convention or treaty, we created the *Panel for a Global Public Health Convention*, which since its announcement in April 2021 has advocated for an international legally binding convention. We also have generated the creation of other think-tank and advocacy groups to promote positive and sustainable change in how we prevent, prepare for, and respond to pandemics: the Global Pandemic Policy Group, the U.S. Consortium, the Florida Pandemic Champions, and the Florida Task Force for Quality Improvement and Pandemic Management.

With pandemic prevention and response efforts across global, national, regional, and even local levels, we welcomed the World

Health Assembly resolution on December 1, 2021, which established an International Negotiating Body to draft and negotiate a WHO convention, agreement or other international instrument on pandemic prevention, preparedness, and response. Now that there is a process in place to define the specifics of what needs to be incorporated into such a convention, our work has shifted to advocating for the principles highlighted in this report: transparency, equity, accountability, and finance.

Together, we can prevent the next pandemic.



Jorge Saavedra, M.D., M.P.H., M.Sc.

Executive Director, AHF Global Public Health Institute at the University of Miami



Jose Szapocznik, Ph.D.

*Professor and Chair Emeritus, Department of Public Health Sciences,
University of Miami School of Medicine*

Head of Secretariat, Panel for a Global Public Health Convention

We gratefully acknowledge our funder, the AIDS Healthcare Foundation. We also acknowledge the support of the AHF Global Public Health Institute at the University of Miami.

This report would not have been possible without the vital contributions of many colleagues. We are indebted to the members of our Global Public Health Convention Advisory Group ([Appendix: Advisory Group](#)), for their sage input and guidance in the formulation of these recommendations.

We thank our collaborators Johnathan Duff and Kendra Morancy, who had key roles in study development and qualitative analysis, as well as the authors of the University of Miami study published in the *Lancet Public Health* (Duff et al., 2021).

We also thank the stakeholders who agreed to be interviewed, for their candor in sharing with us their views that underpin the recommendations drawn from our study. Due to confidentiality, names will remain anonymous.

We are grateful for the exceptional support of the University of Miami Writing Center, and particularly the guidance provided by Dr. Valerie Gramling, who acted as lead editor of the final report.



José Szapocznik, Ph.D.
Professor of Public Health Sciences



Jacob N. Batycki, M.P.H.
Senior Research Associate II



Anicca Liu, M.P.H., M.A.
Senior Research Associate II



Rachel Waldman, M.A.
Graduate Research Assistant



*Guilherme Ferrari Faviero,
J.D., M.P.H., M.Sc.*
Lead Policy Analyst



*Jorge Saavedra, M.D.,
M.P.H., M.Sc.*
Executive Director,
AHF Global Public Health Institute
at the University of Miami

CDC - United States Centers for Disease Control and Prevention

LMICs - Low- and Middle-Income Countries

FCTC - WHO Framework Convention on Tobacco Control

FDA - United States Food and Drug Administration

G7 - The Group of Seven (G7) is an inter-governmental political forum consisting of Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.

G20 - The G20 or Group of Twenty is an intergovernmental forum comprising 19 countries and the European Union (EU).

GPMB - Global Preparedness Monitoring Board

IAEA - International Atomic Energy Agency

IHR - WHO's International Health Regulations

IPPPR - Independent Panel for Pandemic Preparedness and Response

JEE - Joint External Evaluation Exercises (JEE)

NGO - A nonprofit organization that operates independently of any government, typically one whose purpose is to address a social or political issue.

PHEICs - Public Health Emergencies of International Concern

QCA - Qualitative Content Analysis

UN - United Nations

WGPR - Working Group on Strengthening WHO Preparedness for and Response to Health Emergencies

WHA - World Health Assembly

WHO - World Health Organization

WHO Secretariat - carries out routine operations and helps implement strategies, consists of experts, staff, and field workers who have appointments at the central headquarters or at one of the six regional WHO offices or other offices located in countries around the world.

WTO - World Trade Organization

CONTENTS

Executive Summary & Recommendations 11

PART I Defining the Landscape 15

1. PANDEMICS AND THE GLOBAL ECONOMY 16
 - 1.1 *The Economic Costs of Outbreaks, Epidemics and Pandemics* 17
 - 1.2 *Disproportionate Burden on Low- and Middle-Income Countries* 22
 - 1.3 *Health, Education, and Inter-Generational Economic Mobility* 25
2. GOVERNANCE FOR HEALTH IN THE 21ST CENTURY 28
 - 2.1 *Challenges to Effective Global Health Governance* 29
 - 2.2 *State Centricity* 31
 - 2.3 *Non-Compliance with the International Health Regulations* 33
 - 2.4 *Alternative Governance Models* 37
 - 2.5 *Lack of Sustainable Funding* 39

PART II The Study 41

1. METHODOLOGY 42
2. OVERVIEW OF RESULTS 46
3. TEN RECOMMENDATIONS 47
 - #1 *Authority* 49
 - #2 *Responsiveness* 56
 - #3 *Expertise* 61
 - #4 *Evaluation* 65
 - #5 *Enforcement* 69
 - #6 *Autonomy* 76
 - #7 *Financing* 80
 - #8 *Representation* 85
 - #9 *Multisectorality* 93
 - #10 *Commitment* 98

PART III Discussion 111

1. OVERVIEW OF FINDINGS 112
2. DISCUSSION OF FINDINGS 115

PART IV Conclusion: The Road Ahead 123

References 127

Appendix: Advisory Group 143

Appendix: Editorial Photo Captions 149

Infectious diseases with pandemic potential present a grave threat to the health and well-being of human societies with the potential to devastate the world's economy. Estimates of the cost of the pandemic have varied widely, ranging from \$11 trillion in 2020 alone to \$12.5 trillion through 2024, and \$28 trillion through 2025. While the WHO's International Health Regulations (IHR) provide a framework of nominally binding legal obligations for preparedness for and response to public health emergencies of international concern, many countries do not comply with these regulations. This suggests the need for a new framework for global collective action that will ensure compliance with universal pandemic prevention, preparedness, and response regulations.

We conducted a study to establish the necessary characteristics for global collective action that could effectively ensure greater international cooperation in infectious disease pandemic prevention, preparedness, and response. The lack of an adequate system to ensure coordination, collaboration, and compliance with international public health security agreements such as the IHR bolsters the need to create a new convention for global public health security that effectively addresses these shortcomings. The current initiative compiled expert input on characteristics of a global public health security convention that could optimize pandemic prevention, preparedness, and response.

We identified 29 global experts and conducted individual interviews on their views on characteristics of a new global public health security convention that could optimize pandemic prevention, preparedness, and response. The experts came from the U.S., Europe, Africa, Latin America, and Asia and represented the fields of global health, public health, economics, infectious diseases, epidemiology, politics and government, law, and medicine. Data were transcribed. These qualitative data were organized, stored, and analyzed using AtlasTi. A report with the findings was circulated to the experts and their input was integrated.



SUMMARY

FINDINGS

Participants identified several changes to strengthen the governance of international pandemic prevention, preparedness, and response. Identified themes and categories were organized into ten recommendations. The recommendations centered around the authorities needed by a global governing body, the characteristics, and capabilities of such an organization, and key components for an effective system including enforcement mechanisms, political independence and sustainable funding, transparency and accountability, and responsibilities of stakeholders.

It was noted that the WHO does not have any authority around pandemics other than advising and providing technical assistance. All authority in this regard rests with the World Health Assembly, the group of nearly 200 countries that governs the WHO. The experts believed that a global body is needed that has the authority and resources to coordinate prevention of outbreaks from becoming pandemics, preparedness, and response. Moreover, primary prevention of infectious outbreaks needs to be added to the scope of responsibility of that global body, and the authority and resources to coordinate all types of prevention.



Discussion

Recommendations for a new global public health security convention as described by a group of experts included principles of best practices, suggestions for improvements

to the current system, and goals for a new global compact. In some respects, the recommendations affirmed some current practices, with suggestions for improvements. In other instances, they presented novel approaches or new components to existing practices. While actualizing some of these recommendations may prove challenging, they would significantly improve pandemic prevention, preparedness, and response, as well as better equip the world to prevent and mitigate the effects of infectious disease pandemics.

Steps to achieving these recommendations include:

- *Assembling an invested alliance*
- *Clearly communicating the benefits of an effective public health framework to garner support*
- *Specifying the operational structures needed to actualize these principles*
- *Overcoming barriers such as*
 - *The lack of political will*
 - *Scarcity of resources*
 - *Individual national interests*

Finally, it is important to note that it would take 500 years to spend as much on investing in pandemic preparedness as the cost of the COVID-19 pandemic in 2020 alone.

**"IT WOULD TAKE
500 YEARS TO SPEND
AS MUCH ON INVESTING
IN PREPAREDNESS
AS THE WORLD IS LOSING
DUE TO COVID-19."**

~ GLOBAL PREPAREDNESS MONITORING BOARD

Recommendations for a Global Public Health Convention for the 21st Century (Duff et al., 2021)



PART I: DEFINING THE LANDSCAPE

1. PANDEMICS AND THE GLOBAL ECONOMY

- 1.1 The Economic Costs of Outbreaks, Epidemics and Pandemics*
- 1.2 Disproportionate Burden on Low- and Middle-Income Countries*
- 1.3 Health, Education, and Inter-Generational Economic Mobility*

2. GOVERNANCE FOR HEALTH IN THE 21ST CENTURY

- 2.1 Challenges to Effective Global Health Governance*
- 2.2 State Centricity*
- 2.3 Non-Compliance with the International Health Regulations*
- 2.4 Alternative Governance Models*
- 2.5 Lack of Sustainable Funding*



A pandemic, the spread of a new disease around the world, can cause tremendous human suffering and mortality. The bubonic plague or Black Death of 1346-1353 caused an estimated 200,000,000 deaths worldwide (DeLeo & Hinnebusch, 2005). The Spanish Flu pandemic of 1918-1920 killed approximately 50,000,000 persons around the world (Centers for Disease Control and Prevention (CDC), 2019). Since its recognition in the early 1980s, pandemic HIV has infected over 75 million people worldwide, of whom over 37 million have died (World Health Organization (WHO), 2021a). Beyond mortality, these pandemics have also produced detrimental social and economic consequences that have further impacted the health and well-being of populations at individual, national, and global levels.

1. PANDEMICS AND THE GLOBAL ECONOMY

We also live with the scourge of existing infectious diseases such as malaria, an endemic mosquito-borne parasitic illness. In 2018 alone, 228 million people were infected with malaria, of whom 405,000 died, half of them children (WHO, 2020c). Other wide-spread infectious diseases include dengue, Ebola, influenza, Middle East respiratory syndrome (MERS), severe acute respiratory syndrome (SARS), and Zika. While not all of these have reached pandemic status, each has caused immense human loss and suffering. As of publication, SARS CoV-2 has infected more than 509 million people around the world, and over 6.2 million have died of Coronavirus Disease 2019 (COVID-19) (Johns Hopkins Coronavirus Resource Center, 2022). As staggering as those figures are, they are considered significant undercounts because they include only confirmed cases (Michaels, 2020; Pifarré i Arolas, et al., 2021).

In addition to jeopardizing the health of populations, pandemics demonstrate the threats posed to livelihoods as well as life (Bloom & Cadarette, 2019). Human health has been recognized as central to successful economies for almost 30 years. A healthy population enables productivity, which in turn enables economic returns to households. This creates opportunity for more inclusive and sustainable societal economic growth (de Andrade et al., 2015). Thus, reducing morbidity and mortality is fundamental to increasing the economic productivity of individuals and the economic growth rate of countries (World Bank, 1993).

1.1 THE ECONOMIC COSTS OF OUTBREAKS, EPIDEMICS, AND PANDEMICS

The mere presence of an infectious disease outbreak can affect global economic activity; concern over the spread of even a relatively contained outbreak can lead to prolonged periods of decreased trade (National Academies of Science, Engineering, and Medicine, 2017; Moon et al., 2017; United Nations, 2016a; United Nations Development Programme, 2013; United Nations Development Programme, 2017). The extent of economic and labor market contractions and subsequent recoveries *“depend crucially on the duration and the success of the containment measures, how far supply capacity and domestic demand are permanently affected, and the success of policies in mitigating the adverse impact on incomes and employment”* (Lagarde & de Guindos, 2020, p. 3).

In an average year, infectious disease outbreaks and epidemics cost the global economy billions of dollars through loss of life and other productivity losses due to workforce disruptions caused by sickness and slowed output. For example, the 2003 SARS epidemic, 2009 H1N1 influenza pandemic, and the 2014-2015 West African Ebola epidemic cost a combined \$148 billion in economic and social losses (Global Preparedness Monitoring Board [GPMB], 2019). Furthermore, the 2014-2015 West African Ebola outbreak resulted in -8.5% GDP growth in Liberia, -9.4% in Guinea and -4.8% in Sierra Leone in 2015 (Kennedy et al., 2016; Zafar et al., 2016). Even endemic diseases that operate cyclically, and for which there exist vaccines and clear prevention and control guidelines, cost the global economy billions of dollars annually. For example, the yearly cost of seasonal influenza in the U.S. alone is estimated at roughly \$500 billion, including both lost earnings and the intrinsic cost of elevated mortality (Fan et al., 2016).



No prior epidemic or pandemic prepared us, however, for the cost of COVID-19. The COVID-19 pandemic pushed the world into the worst global recession since the Great Depression (World Bank, 2020a). Christine Lagarde, president of the European Central Bank, reported that as a result of COVID-19, in 2020, the world's economies faced contractions *“of a magnitude and speed that are unprecedented in peacetime”* (Lagarde & de Guindos, 2020, p. 1).



In the case of COVID-19, governments issued stay-at-home orders and mandated physical distancing measures that resulted in closed schools, businesses, and workplaces, ceased global travel and tourism, and canceled public services and events. These restrictions impaired the movement of people and factors of production, including workforce, raw

materials, and capital, thereby affecting both the demand and supply sides of the economy (Braw, 2020; Boissay & Rungcharoenkitkul, 2020; Cassell et al., 2017; Chan, 2020; International Monetary Fund, 2020; Haren & Simchi-Levi, 2020; Lane, 2020).

The COVID-19 pandemic caused unprecedented disruptions to economies and labor markets. The European Union's statistical office, for example, recorded a historic shrinkage of 13.9% in seasonally adjusted GDP in early 2020 (Eurostat, 2020b). Moreover, GDP fell by 6.4% in the second quarter of 2020 in the EU, which represented the sharpest decrease since the time series began in 1995 (Eurostat, 2021b). Moreover, the 2020 halt in economic activity had an immediate and sweeping impact on employment globally. In the United States, the unemployment rate grew from 3.6% to 13% between the fourth quarter of 2019 and the second quarter of 2020 (Smith, Edwards & Duong, 2021). In the European Union, for example, Eurostat reported that the unemployment rate was 7.6% in October 2020 (Eurostat, 2020c), 6.7% in October 2021 (Eurostat, 2021a), and had only improved to an estimated 6.2% by February 2022 (Eurostat, 2022).



Such adversities are not unique to the world's highly developed economies. Antonio Guterres, Secretary General of the United Nations, noted that the adverse effects of prolonged restrictions on economic activities in developed countries spill over to developing countries via trade and investment channels (2020). The IMF reported that the pandemic severely impacted emerging economies in 2020, highlighting figures of -8.2% real GDP growth in Mexico, -4.1% in Brazil, -8.0% in India, -4.1% in Saudi Arabia, and -7.0% in South Africa (International Monetary Fund, 2021a). Latin America and the Caribbean as a whole experienced real GDP growth of -7.0%. The IMF suggested that these countries would need to spend US\$450 billion to tackle the pandemic and regain

their pre-pandemic paths toward economic growth (International Monetary Fund, 2021b). Furthermore, countries in which oil exports create more revenue than other economic activity, forming significant percentages of their GDP, suffered tremendously because of stay-at-home orders and global travel bans that tanked oil prices. Consequentially, the currencies of OPEC countries suffered

devaluations (Tobben, 2020). The IMF noted that the real GDP growth for the Middle East and Central Asia was -2.9% in 2020 (International Monetary Fund, 2021a). Additionally, projections for GDP growth in 2021 also were downgraded for Saudi Arabia due to subdued oil production below the OPEC+ quota (International Monetary Fund, 2021b).

Economies that heavily rely on tourism were also greatly impacted by the COVID-19 pandemic. Stay-at-home orders, border closures, and travel bans indicated major shifts in economic and social well-being among countries that are tourism-dependent. A year into the pandemic, 900 million fewer international tourist arrivals were reported globally in comparison to 2019, resulting in a loss of US\$935 billion in export revenues from international tourism. Asia and the Pacific recorded an 82% drop in arrivals from January to October 2020, while the Middle East saw a 73% decline and Africa reported a 69% drop during this period (United Nations World Tourism Organization [UNWTO], 2020). In the first five



months of 2021, Asia and the Pacific continued to suffer major declines, with a 95% decrease in international arrivals (UNWTO, 2021). Furthermore, the emergence of the Omicron variant and subsequent reintroduction of travel restrictions were connected to a 67% drop in world arrivals in January 2022 (UNWTO, 2022). Losses to the tourism sector may further exacerbate health outcomes related to the pandemic in developing countries that rely on tourism, as those countries may feel pressure to enable travel despite poor medical infrastructure and consistently concerning rates of COVID-19.

Estimates of the cost of the pandemic vary widely, ranging from \$11 trillion for 2020 (GPMB 2020) to \$12.5 trillion through 2024 (Reuters 2022), to \$28 trillion through 2025 (Congressional Research Service 2021). The total GDP decline in the first year of the pandemic has been estimated at 3.5%. By comparison, worldwide GDP fell by less than 1% during the 2008-2009 Great Recession (Chatham House, 2018). The Global Preparedness Monitoring Board estimated that it would take 500 years to spend as much on pandemic preparedness as what the world already

lost to the COVID-19 pandemic in 2020 alone (2020).

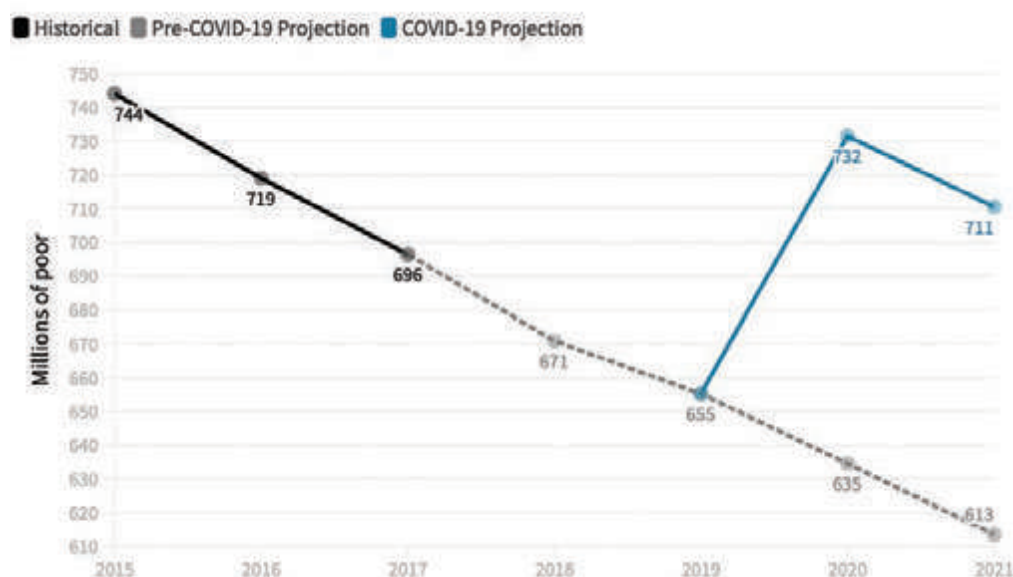


In the first year of the pandemic, the world's ailing economies reflected the far-reaching impacts of pandemic-related illness and deaths as well as pandemic-necessitated restrictions on economic activity. The effect was less money in the hands of consumers and increased financial caution as a result of pandemic-induced economic

worries, particularly among those with decreased or lost income due to coronavirus-related layoffs and furloughs (Battistini & Stoevsky, 2020; European Central Bank, 2020). COVID-19 put many people out of work, compromising their ability to maintain their livelihoods; many lost the ability to pay for rent, groceries, and healthcare. Such wide-scale economic disruption weighed heavily on economic growth measured by annual GDP (UN, 2020a).

The International Monetary Fund notes that *“much the same way COVID-19 hits people with pre-existing health conditions more strongly, so is the pandemic-triggered economic crisis exposing and worsening financial vulnerabilities that have built up during a decade”* (Adrian & Natalucci, 2020, p. 1). This reminds us that existing disparities in health, wealth, and income are exacerbated during economic crises (Alsan et al., 2016; Benatar et al., 2011; Bowles & Gintis, 2002; Braveman & Barclay, 2009; Braveman, 2006; CDC, 2013; Dodgson et al., 2002; Langer et al., 2015; Gopalan & Das, 2009; Spiegel et al., 2015; United Nations, 2016b).

1.2 DISPROPORTIONATE BURDEN ON LOW- AND MIDDLE-INCOME COUNTRIES



Source: *Lakner et al (2020) (updated), PovcalNet, Global Economic Prospects.*

Note: Extreme poverty is measured as the number of people living on less than \$1.90 per day. 2017 is the last year with official global poverty estimates. Official poverty estimates are available for East Asia & Pacific, Europe & Central Asia, Latin America & Caribbean, and rest of the world for up to 2019, and for Middle East & North Africa and Sub-Saharan Africa up to 2018. Regions are categorized using PovcalNet definition.

During COVID-19, no region of the world has been spared the economic disruptions caused by restrictions on economic activity (Bloom et al., 2018; Bluedorn et al., 2020). COVID-19 is likely to have caused the first increase in worldwide poverty since 1998, pushing between 119-124 million people into extreme poverty in 2020, and an additional 24-39 million in 2021 (Mahler et al., 2020; Lakner et al., 2021, See Figure 1). This steep growth in global poverty signifies potential increases in economic and health disparities among vulnerable populations for generations.

It is well-established that poor health disproportionately burdens those of low socioeconomic status in all countries. For example, low- and lower-middle-income countries accounted for over 83% of global disability adjusted life-years (DALYs) for communicable conditions in 2019 (World Health Organization, 2020e). Communicable diseases, including malaria, tuberculosis, and HIV/AIDS, continue to be among the top ten causes of death in LMICs (Pan American Health Organization [PAHO], 2020). Moreover, LMICs have much lower health investments as a percent of GDP, fewer doctors and hospital beds, and dramatically fewer health resources per capita (WHO, 2020a, 2020b; Hausmann, 2020). The result is that those who already live in poverty, especially in low- and middle-income countries, carry a disproportionate burden of disease (Braveman, 2006; Commission on Social Determinants of Health, 2008; CDC, 2013; de Andrade et al., 2015; Engels & Zhou, 2020; Marmot, 2005; Marmot et al., 2008).

Beyond limited access to health care, people living in poverty cannot afford protections against financial instability; those who lack a functioning safety net cannot simply stop working to protect their health. In fact, to not risk their precarious financial situation, the poor are often forced to continue working, even at the risk of their health during strict disease containment measures, to place food on their families' tables (Organisation for Economic Co-operation and Development [OECD], 2020). Additionally, LMICs may be least able to financially support their citizens in times of crisis. The inability to garner economic support through personal savings or national stimulus payments reflects the limited infrastructural capacity of LMICs and further contributes to poor health outcomes among impoverished groups.





Pre-existing issues involving poor medical infrastructure and lack of resources reveal additional concerns that emerge with pandemic preparedness, prevention, and response plans. Developing countries that are financially unable to design and implement strategies to prepare for pandemics might be more heavily impacted by infectious disease outbreaks. Furthermore, the high costs tied to the control of emergent pandemic diseases make it difficult to respond to other infectious diseases, including neglected tropical diseases that are a scourge in many LMICs (Hotez et al., 2012; Hotez, 2013; Engels & Zhou, 2020; Mathers et al., 2007; Mitra & Mawson, 2017). The inability of some governments to offer prompt and effective responses might aggravate economic and health-related concerns that predate the pandemic, potentially widening the gap that already exists between LMICs and high-income countries. As countries of the Global North continue healing, those of the Global South have been left trailing behind, suffering more intense consequences over longer periods of time due to disadvantages and inequities that existed prior to the COVID-19 pandemic.

Pandemics have been shown to cause great disturbances to educational attainment (Hahn & Truman, 2015; *“Education,”* 2020). In the long term, education impacts national economic and social prosperity as a catalyst for high productivity and technological innovation (Eurostat, 2019). On the individual level, low educational attainment can result in a lack of skills or competencies that are necessary to secure jobs that offer sufficient and livable wages. Because of this, hindrances to education may limit upward economic mobility and may increase the risk of poverty and social exclusion (Eurostat, 2019).

1.3 HEALTH, EDUCATION, AND INTER-GENERATIONAL ECONOMIC MOBILITY

The necessity for physical distancing during the COVID-19 pandemic led to school closures and reliance on access to high-speed internet.

As governments ushered in various efforts to contain the spread of COVID-19 in the second quarter of 2020, schools were closed to approximately 1.5 billion students globally. This represented approximately 90% of total enrolled learners across 191 countries with country-wide school closures (UNESCO, 2020). With classes shifting online, digital learning modalities were not equally available to the poor, underscoring a significant difference in privilege along the income gradient. Globally, at least 463 million students do not have access to a computer and high-speed internet connection at home, rendering them unreachable by remote learning programs (UNICEF, 2020b). In particular, students located in rural regions represented around 76% of those who could not be reached by remote learning modalities globally (UNICEF, 2020b). Children from poorer families are at the greatest risk of falling behind, especially if they lack internet access, live with disabilities, reside in rural areas, or are migrants or members of indigenous communities (Kahan, 2018; OECD, 2020; Rizga, 2020; UN, 2015; UNICEF, 2020a; UNESCO, 2020). This can be particularly problematic at a time when remote learning modalities are used for educational continuity in the vast majority of countries.



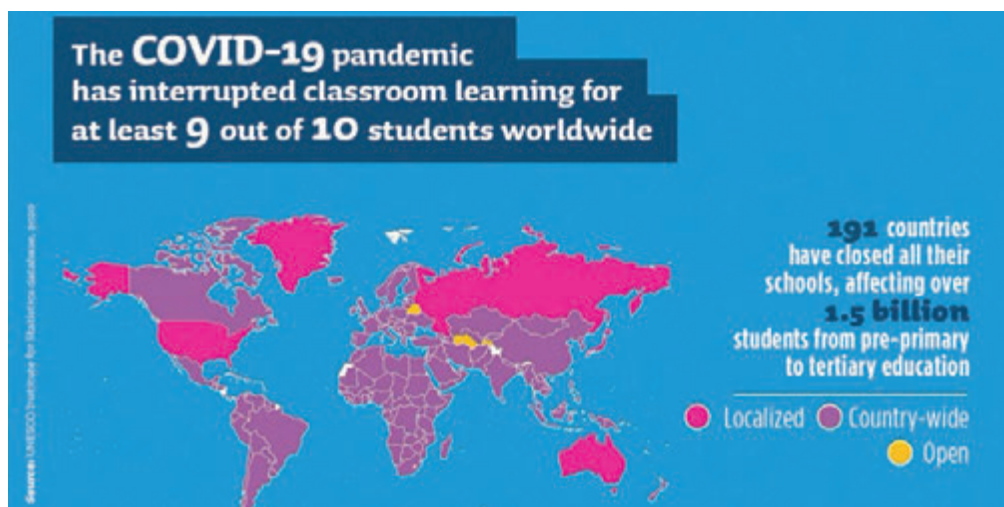


Figure 2: Effect of COVID-19 on localized and country-wide school closures globally, April-May 2020. Source: UNESCO, 2020.

Another concern that emerged following the switch to remote learning was the content and quality of education that was offered to students. The abrupt change to digital learning platforms throughout the pandemic generated concerns about how well in-person education translates remotely (St. George et al., 2021). This transformation prompted the need for new technological skills and rapid adjustments to teaching techniques in a short period of time (UN, 2020b). The inability to accommodate for these new requirements might have indicated a reduction in the quality of education for students around the world (Hodges et al., 2020).

Furthermore, income and employment losses can dramatically hinder families' abilities to provide supportive learning environments, thereby adversely affecting students' scholastic achievements and plans for higher education (Keates, 2020; Woolf & Braveman, 2011). For example, following the 2008 global financial crisis, a survey found that a fifth of young adults in the U.S. abandoned or delayed their college plans (Greenberg & Keating, 2009). Similarly, in the wake of school closings and college admission test cancellations due to COVID-19, many students postponed college plans, opting instead to take a gap year (studentPOLL, 2020). The decision to defer or forgo higher education might have been influenced by potential dissatisfaction related to tuition fees, which had often gone unchanged during the pandemic, despite the switch to online learning (Hubler, 2020). Such delays or reductions in university attendance harm the productivity of workers and the competitiveness

of economies (Burgess & Sievertsen, 2020; International Bank for Reconstruction and Development, 2018; National Center for Education Statistics, 1997).



Pandemics like COVID-19 have illuminated the significant threat global recessions bring to the funding of education. Since the beginning of the COVID-19 pandemic, two-thirds of LMICs cut their public education budgets, compared with only one-third of upper-middle and high-income countries that reported budget reductions (World Bank Group, 2021). Economic crises caused by pandemics like COVID-19 amplify existing inequalities—within and across countries—in access to quality education and opportunities for advancement. Educational disruptions caused by pandemics may reinforce the disadvantages typically moderated by educational access, ultimately exacerbating economic disparities and impairing upward intergenerational socioeconomic mobility (International Commission on the Futures of Education, 2020).

Global public health governance is an evolving system comprised of nearly 200 interlinked actors and institutions across different intergovernmental, civil society, non-governmental and philanthropic organizations (Hoffman et al., 2020). Currently, pandemic preparedness and response activities are governed by a somewhat uncoordinated system of international, national, and sub-national parties. The single most influential actor within this system is the World Health Organization (WHO)—the United Nations’ technical agency for health—comprised of the World Health Assembly (WHA) and the WHO Secretariat (Kickbusch et al., 2010).

The WHA has the authority to determine and approve the policies that govern the WHO and to make recommendations to Members on health-related matters (WHO, 2006, p. 8). The WHA also appoints the Director-General, who as the WHO’s chief administrative and technical officer heads the WHO Secretariat and oversees policy implementation for the organization’s international health work (WHO, 2006). Meanwhile, the core functions of the WHO Secretariat involve providing strategic and technical support as well as maintaining leadership on advice and norm-setting over health-related matters. The WHO Secretariat is also responsible for monitoring health situations and assessing health needs (WHO Evaluation Office, 2017).



The effectiveness of the WHO depends on harmony between the Member States comprising the WHA, specifically, their cooperation under the WHO Constitution (Katz & Fischer, 2010; Kickbusch et al., 2010; Nugent, 2003; Koenig-Archibugi, 2010). This cooperation delicately balances global, regional, and state interests, needs, and priorities – a balance that must be maintained for the WHO to be able to take necessary action to prevent, prepare for, and respond to pandemics. However, while the WHO Secretariat has been granted the *normative* authority to coordinate global efforts in the fight against infectious diseases, *“its ability to exercise this authority has been hamstrung by, inter alia, political gridlock, organizational deficiencies, inadequate finances, and a failure to embrace non-state actors”* (Gostin et al., 2015).

The WHO Secretariat therefore must maintain favorable diplomatic relationships with individual governments, without which it cannot deploy and manage resources to Member States or enforce compliance with science-based pandemic regulations (National Academies of Sciences, Engineering, and Medicine, 2016; Sridhar et al., 2016). This arrangement has perpetuated an imbalance by which governments comprising the WHA can act in the interest of their own sovereignty, while the WHO Secretariat cannot take action that would otherwise be in the best interest of *all* countries.

As Gostin et al. (2015) suggest, without the *explicit* authority to act on behalf of Member States, the WHO Secretariat is limited in its ability to coordinate prevention, preparedness, and response to pandemics and public health emergencies of international concern. Therefore, the WHO is limited in its ability to generate more effective policy interventions and executive actions that achieve sustainable improvements in global health security.



2.1 CHALLENGES TO EFFECTIVE GLOBAL HEALTH GOVERNANCE



A functional global architecture with executive leadership capacity in pandemic prevention and response would require that global public health body(ies) be granted that authority. Such authority may not be currently inherent in the WHO because the WHA, which is made up of ministers of health, does not have the power to grant authority to manage countries (Gostin et al., 2015). That authority—to coordinate and ensure compliance—can only be granted by heads of state. Therefore, since the possibility of a coordinated global response to infectious disease requires a functional global architecture for pandemic prevention and management, that global architecture must be placed under the authority of heads of state (Moon et al., 2015).

State centrism involves member states pursuing their own self-interests. The protection of a state's political boundaries—including its unwillingness to share sovereignty specific to pandemic management with global entities—often takes priority over global matters. The resulting tension between national sovereignty and global solidarity is a significant barrier to global health governance (National Academies of Sciences, Engineering, and Medicine, 2016).

State responses to global infectious disease threats are often rooted in concerns about national security (Deloffre, 2014). In the national security approach, countries focus on land and sea border control to prevent, prepare for, and



respond to infectious diseases, under the assumption that *“contagion can be contained at the border with sufficient national capacity”* (McInnes & Lee, 2012, p. 108). While the responsibility of governments to protect their people is undeniable, a purely national security focus can delay crucial multilateral action in response to pandemics (Sridhar et al., 2016). Many countries demonstrate a tendency to respond to infectious diseases only when spread in or near their borders, i.e., when infectious diseases become a more conceivable threat, not recognizing the multiple pathways that viruses can take in their spread into a country. This approach favors careful expenditure of resources; however, in the context of pandemics, delayed action or inaction may be highly consequential, especially for the poorest countries whose populations already carry the greatest global burden of disease (Flahault et al., 2016).

Refusal or hesitancy to share relevant health information represents another way in which states may act in pursuit of their own self-interests – for global public health cooperation to be maintained, epidemiological data must be shared in a timely fashion (Porcelain, 2015). Despite this, some states may delay or forgo offering information regarding infectious disease concerns occurring within their borders that could predictably result in political and financial consequences (Moon et al., 2015). Under the International Health Regulations (IHR, or Regulations), states are

2.2 STATE CENTRICITY & NATIONAL SELF INTEREST

obligated to submit data concerning their ability to develop multiple capacities related to prevention and protection against the international spread of disease (Bartolini, 2021). However, because the IHR monitoring system is based entirely on self-assessments, states may refrain from offering accurate data on their own preparedness to avoid the financial costs associated with capacity building (Bartolini, 2021). State centrality can also occur during the pandemic response phase, as some countries may withhold beneficial research and information concerning strategies, treatments, and vaccines due to potential financial gain.



Pandemics illustrate that infectious diseases do not recognize geopolitical borders and can strike any country regardless of its resources or the strength of its healthcare system. Thus, ensuring global health security requires that protections against pandemics be equitably distributed throughout the world. A new global public health convention

must therefore emphasize collective human security, which builds on common values (e.g., health, personal, economic, global security [United Nations Development Programme, 1994]) rather than national interest. A new international agreement must assure countries that sharing authority with a global architecture for global public health security will exclusively serve for responding adeptly to and managing outbreaks, emergencies of international concern, and pandemics. Granting such authority would allow global public health bodies to intervene within countries to prevent outbreaks from becoming pandemics. With the required authority for pandemic management, a functional global public health architecture will promote and protect the health of all people and all countries (GPMB, 2020; World Bank Group, 2017).

Following the 2003 SARS epidemic, the international community joined together in 2005 to revisit and strengthen the IHR. First adopted by the WHA in 1969, the IHR are an international instrument of law establishing guidelines for countries' capacities for detecting, assessing, and reporting global public health threats under WHO coordination (World Health Assembly, 2006). While the IHR obligate States Parties to develop certain capacities, compliance is highly variable: in 2018, only 26% of States Parties reached the 75-100% implementation range of the WHO's Core Capacity Monitoring Framework required for minimum IHR compliance (WHO, 2019). When dangerous and highly infectious diseases are involved, selective compliance with the IHR places the global community at greater risk for pandemics.

2.3 INTERNATIONAL HEALTH REGULATIONS NON-COMPLIANCE

Noncompliance has stemmed from complex sociopolitical and economic factors (Katz & Fischer, 2010). LMICs with limited financial or human resources have less capacity than high-income

countries to achieve and sustain public health systems required by the IHR (Gostin & Katz, 2016). Beyond limited resources, an emerging reason for noncompliance is politics that disregard global institutional regulations and agreements, international law, and scientific guidance (Daniszewski, 2020; Leonhardt & Leatherby, 2020; West, 2021; Weisman & Stolberg, 2021; Sreeharsha, 2021). Examples observed during the COVID-19 pandemic include governments' withholding of disease data (Li et al., 2021; Luhnnow & Montes, 2021), misrepresentation of scientifically-based information (Magalhaes & Forero, 2020; Weisman & Stolberg, 2021; Conger, 2021), as well as refusals to enforce physical distancing (Pancevski & Chopping, 2020; Simmons, 2020; Sreeharsha, 2021) or mandate the use of personal protective equipment, such as universal mask-wearing (Carlton, 2020; West, 2021).



Language of the IHR

Some readings of the IHR appear to suggest that the WHO is granted unprecedented authority to take actions that can challenge governments (Feldbaum et al., 2010; Fidler, 2020). In actuality, the WHO does not have such authority. This is in part because ministers of health, who comprise the WHA, cannot commit their countries to share sovereignty. Furthermore, there are no mechanisms granting the WHO Director-General direct *“control over the agency’s worldwide resources, workforce, norm development, [or] deployment in a global health emergency”* to enforce IHR compliance (Gostin, 2015, p 6-7). As seen during COVID-19, widespread lack of compliance has resulted in major global epidemiological, political, and economic repercussions (Bartolini, 2021).

The IHR include language that ultimately weakens the WHO’s authority to enact the IHR’s provisions. For example, the IHR disease reporting algorithm and annexes *“are not binding and are [only] for indicative guidance purposes to assist in the interpretation of the decision instrument criteria”* (World Health Assembly, 2006, p. 44). Lack of clarity and broad language also act as a barrier to ensuring compliance with obligations outlined in the IHR; the absence of specific targets and deadlines in the IHR has hindered their ability to be operationalized. This therefore weakens the capacity for enforcement by creating avenues for States Parties to selectively comply with the IHR (Bartolini, 2021; Habibi et al., 2020).

In matters of a potential dispute between the WHO Secretariat and one or more States Parties concerning the interpretation or application of the IHR, the WHO Secretariat cannot resolve such a dispute directly and instead it *“shall be submitted to the Health Assembly”* (World Health Assembly, 2006, p. 35). As such, a States Party can cite a certain interpretation of the IHR in its choice to not comply, while the WHO Secretariat has no authority to act on that dispute.

IHR: Disease Reporting

Per the IHR, States Parties *“shall notify WHO, by the most efficient means of communication available ... of all events which may constitute a public health emergency of international concern within [their territories]”* (World Health Assembly, 2006, p. 12). The responses to Ebola and COVID-19, however, illustrate that countries do not comply with these disease reporting requirements (Tariq et al., 2019; Walsh, 2020; WHO, 2015, 2020d). This carries great consequences, for without *“empirical evidence on the virulence [...], who is at greatest risk, [or] the speed and the direction associated with the spread of disease from one region to another,”* public health and health care systems may not be ready to respond to health emergencies (Porcelain, 2015, p. 269).

The IHR, however, contain no mechanisms to enforce compliance; they can only *“urge”* States Parties *“to collaborate actively”* with each other and the WHO in accordance with the Regulations’ relevant provisions (World Health Assembly, 2006, p. 4). In the case of disease reporting, the WHO Secretariat may consider additional information from non-state actors but is required to *“consult with and attempt to obtain verification”* from the States Parties concerned. Furthermore, the WHO Secretariat must *“offer to collaborate”* with the said States Parties prior to *“taking any action”* based on received information (World Health Assembly, 2006, p. 13). However, the IHR specify that States Parties are not required to *“accept the [WHO’s] offer of collaboration”* (World Health Assembly, 2006, p. 13), leaving the WHO Secretariat with no recourse. The IHR provide guidelines for how the WHO can interact with States Parties, but explicitly assert that States Parties are not required to comply.

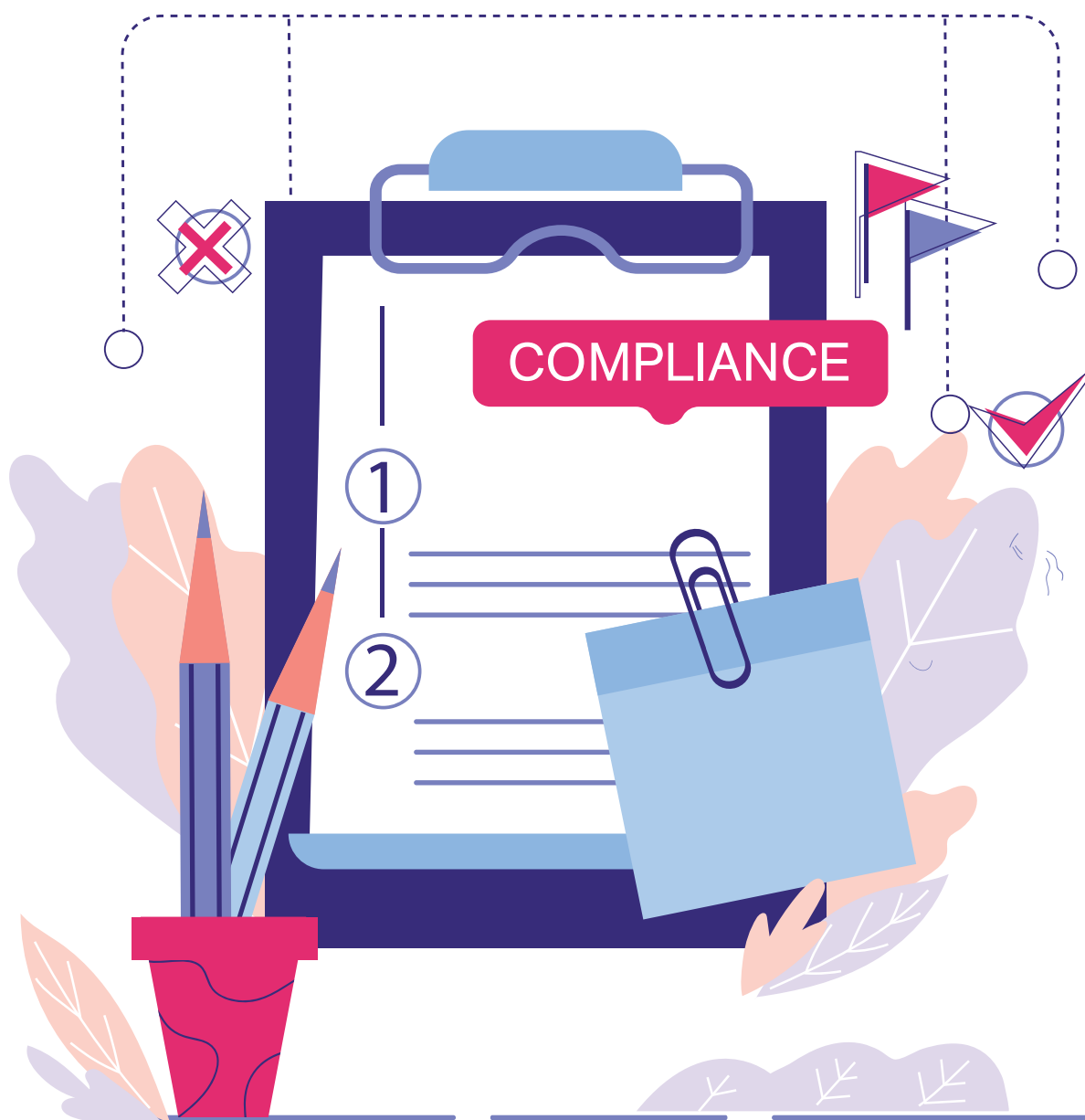
While sometimes a result of weak and fragmented health information systems, noncompliance with the IHR reporting requirement is often the result of *slow political mobilization* following in-country outbreak detection, particularly among developing countries (Hoffman & Silverberg, 2018; Hassan et al., 2018). In the case of LMICs, this may stem from various economic considerations: declarations of outbreaks or epidemics carry not only health-related but also political and economic costs. While high-income countries with stronger economies may undergo temporary economic strain or slowed economic growth in such an event, the economies of LMICs are not as resilient. LMICs may immediately become isolated, damaging their economies (Rohwerder, 2020). This raises the important consideration of adding IHR provisions that protect LMICs against painful economic and political repercussions that otherwise serve to benefit the globe.

Outside the WHO, The Treaty on Non-Proliferation of Nuclear Weapons and its subsequent agreements, negotiated by the International Atomic Energy Agency (IAEA), have been identified as viable governance models for increased transparency and accountability (IAEA, 1994). Two other conventions, The Convention on Early Notification of a Nuclear Accident and The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, were also identified as potentially viable models (IAEA, 1986a; IAEA, 1986b). These two treaties, known jointly as the Chernobyl package, were expediently adopted after the Chernobyl nuclear plant accident in the former USSR in 1986, establishing an international early notification and cooperation system (Pelzer, 2006).

These compacts entrust the IAEA—as the global *“nuclear inspectorate”*— with the authority to *“verify”* that States are *“living up to international commitments not to use nuclear programs for nuclear-weapons purposes”* (IAEA, 2020, p. 1). While the IAEA's safeguard system promotes the safe use of nuclear power and prevents its use for military purposes, it authorizes the Agency *“not only to verify the non-diversion of declared nuclear material but also to provide assurances as to the absence of undeclared nuclear material and activities in a State”* (IAEA, 2020, p. 1-2). In contrast, the IHR do not contain provisions authorizing the WHO to act on States Parties. Furthermore, the IHR lack provisions for objective external review or verification that would otherwise safeguard public health from infectious disease outbreaks or uncontained infectious disease epidemics that could grow into pandemics.



2.4 ALTERNATIVE GOVERNANCE MODELS



Selective compliance underscores a need to address the unenforceability of the IHR (Hoffman, 2010). The IHR do not include incentives or sanctions to encourage or promote compliance. One possible mechanism for increasing compliance would be the monitoring and evaluation of progress toward pandemic prevention, preparedness, and response benchmarks through an IAEA-like inspectorate. Furthermore, the WHO does not have the authority to apply such sanctions, even if it were authorized through the IHR. For a global public health architecture to be effective, it must be able to ensure compliance through a legal instrument granting that authority. Such an authority can only be agreed upon and delegated by heads of state.

A history of underfunding has led global public health institutions to rely on a handful of voluntary state and non-state donors. This brings to light numerous vulnerabilities in the global public health financing infrastructure. In the case of the WHO, its 2020-2021 budget prior to the COVID-19 pandemic was US\$4.84 billion, which is comparable to that of a large hospital in a wealthy country (Huang, 2020). Yet, while the WHO has vast global responsibilities to all countries, less than 20% of its budget comes from contributions assessed from Member States (WHO, 2020d). This leaves roughly 80% of the WHO budget to be secured through fundraising (Sridhar et al., 2016) and results in WHO offices vying against each other for donations (Clift & Rottingen, 2018). Donor control over funds may also oblige offices to align priorities with those of their external funders, potentially weakening the WHO's ability to effectively govern (Reddy et al., 2018).

Another vulnerability in the global public health financing infrastructure stems from the outsized influence of wealthy donors. For example, the top 2 contributors to the WHO program budget in 2018 were the U.S. Government at 15% and the Bill and Melinda Gates

Foundation at about 10% (Moulds, 2020). As such, around a quarter of that year's WHO budget depended on maintaining favorable relations with two stakeholders: a powerful member state and an influential non-state actor headquartered within its borders. This implies that the stakeholders that offer larger contributions may have considerable influence over priorities (Daugirdas & Burci, 2019).



2.5 LACK OF SUSTAINABLE FINANCING

Certain voluntary contributions fund programs that broadly help developing countries improve their public health system capacities. Most donated funds, however, are reserved for specific programs and/or geographical locations and must be spent within specific time frames (WHO, 2020d). These funds are often earmarked in ways that seem to serve donor countries' policy objectives and private donors' priorities (Davies, Kamradt-Scott, & Rushton, 2015). If a major donor does not support global cooperation around health and views multilateralism as a failed enterprise, this will –especially at times of great stress for the global public health system– weaken the entire infrastructure (Horton & Das, 2015; McKay, 2018; Huang, 2020; Galea, 2020). Furthermore, dependence on voluntary contributions may prompt issues related to waxing and waning budgets and delays during periods that require rapid response. *Overreliance on a select number of wealthy donors therefore places the entire global public health architecture at risk.*



To address this voluntary funding dependency, a new global public health security convention must avoid reliance on donations for core functions like emergency response. These functions must be funded from assessed contributions or some other permanent funding mechanism(s) to prevent global bodies responsible for pandemic management

from being subject to the ever-changing tides of political priorities. A convention must also incorporate financial protections for times of crisis, as well as mechanisms for authority and flexibility to streamline resources toward containing and responding to outbreaks and emergencies of international concern before they grow into pandemics. Considering the outsized cost of the COVID-19 pandemic in its first year, which the World Economic Forum estimated had pushed global public debt to an all-time high—close to 100 percent of global annual GDP (2020)—greater financial support of a functional global architecture to manage pandemics is a worthy investment.

PART II: THE STUDY

1. METHODOLOGY

2. OVERVIEW OF RESULTS

3. TEN RECOMMENDATIONS

#1 Authority

#2 Responsiveness

#3 Expertise

#4 Evaluation

#5 Enforcement

#6 Autonomy

#7 Financing

#8 Representation

#9 Multisectorality

#10 Commitment



The study compiled expert input on characteristics for a new global public health security convention that could optimize pandemic prevention, preparedness, and response. Data were collected using semi-structured individual interviews with 29 experts in the fields of global health, public health, economics, infectious diseases, epidemiology, politics and government, law, and medicine. Data were analyzed using qualitative content analysis (QCA). The QCA process involved analysis of interview transcripts to identify initial themes, followed by a review of these themes to establish more refined categories and subcategories.

Study Design and Participants

Eligible participants were professionals in the fields of global health, public health, economics, infectious diseases, epidemiology, politics and government, law, or medicine. Individuals were identified because they have either published in the field of global public health security or have held relevant positions of responsibility in their countries or in international agencies. Recruitment involved identifying a list of professionals with expertise in global health security (i.e., criterion sampling). Stratified purposeful sampling was used to encourage diversity regarding field of study, background of participants, experience level, expertise area, regional representation, and professional capacity. Individuals were sent a recruitment letter inviting them to share their views and opinions on how best to achieve global health security.



1. METHODOLOGY

*Table 1. Participant Representation***Region^a**

North America	19
Europe	6
Latin America & Caribbean	4
Asia	4
Africa	3
Oceania	0

Academic Background & Area of Expertise

Public Health/Global Health	18
Medicine	16
Government/Public Administration	12
Social Sciences	6
Business	4
Law	2
Liberal Arts/Journalism	2
Natural Sciences	1

Current/Most Recent Position

Academia	14
Government (Legislative)	6
Non-profit/NGO	5
Government (Agency)	3
Medicine	1
Journalism/Media	1
Law	0
Private Industry	0

Note: Representation variable totals may be higher than the cumulative number of participants, as several participants represented more than one category. For example, “Region” included current country of residence and nationality.

^a Region is based on United Nations Geographic Regions.

Procedures

Data were collected using semi-structured individual interviews with 29 participants. Participants were diverse with regard to geographic region of the world, academic background, and area of expertise (see Table 1). Interview questions and an interview guide were developed to inform the interview process. Individual interviews were conducted over telephone/video. Each interview was audio-taped and transcribed by a professional transcription service.

Results from the interviews were further reviewed during a virtual roundtable discussion with an Advisory Group comprised of experts interviewed during the first phase of the project and other experts who provided additional perspectives (see Roster in Appendix B; two participants requested anonymity and were excluded from the Roster). This advisory meeting facilitated feedback and clarification on topics discussed in the interviews. Together the interviews and Advisory Group discussion produced the recommendations presented in this report. Advisory Group members also provided a review of written presentations of the findings. Some Advisory Group members elected to be listed as co-authors in the published report (Duff et al., 2021).

Data Analysis

Data collected from individual interviews were analyzed using qualitative content analysis, a method to classify written or oral materials into identified categories of similar meanings (Moretti et al., 2011). More specifically, qualitative content analysis is a method for the *“interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns”* (Hsieh & Shannon, 2005, p. 1278). Qualitative content analysis concentrates on the interpretation of participants’ responses to arrive at a particular meaning (Wood, 2001). The result is an organization of categories and themes—in this case characteristics and qualities of an effective global public health convention.

Qualitative content analysis in this study involved analysis of the individual interview transcripts to identify initial codes, and then a review of the codes to establish categories and subcategories (Hsieh & Shannon, 2005; Schreier, 2012). The process of coding was broken down

into the following steps: selecting coding units, structuring data and main categories, generating and revising codes, organizing codes into subcategories, and defining all final categories (Schreier, 2012). Transcripts of each discussion were analyzed using Atlas.ti version 8 (Frieze, 2020). The themes were then expressed as recommendations, which organize the findings presented below. The information presented under findings represent the opinions of the participants and not those of the research team.

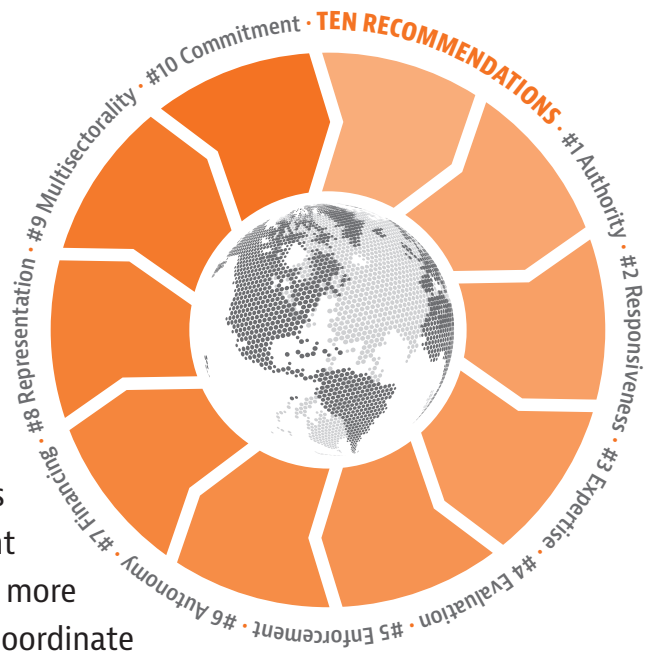
Study participants identified necessary changes to the current global public health system to strengthen pandemic prevention, preparedness, and response. Here, we present the recommendations that were distilled from the 29 expert interviews to inform a new global health security convention or reform the existing system. This convention would constitute an international agreement, compact, or contract by which undersigned countries adhere to a set of pandemic prevention, preparedness, and response practices. This includes the formal treaties and laws that govern global public health and the informal agreements and practices of state and nonstate actors working in this space.

These recommendations represent principles of best practices, suggestions for improvements to the current system, and goals for a global public health convention. In some instances, the recommendations affirm current practices, with suggestions for associated improvements. In other instances, they advise pragmatic changes or present novel approaches



or new components to the existing system. The agency or agencies mentioned here may include existing organizations in addition to other actors, or possibly a new agency or agencies altogether. Some of these recommendations may already exist in some form or be forthcoming. Participants acknowledged that actualizing some of these recommendations will prove challenging; however, the preponderance of group members believed that progress toward these recommendations is needed for prevention, preparedness, and response to outbreaks, public health emergencies of international concern (PHEICs), and pandemics. The specific actions needed to achieve these recommendations are not identified here. Rather, these recommendations represent an initial foundation to build on to improve participation in global prevention, preparedness, and response efforts.

Recommendations for a Global Public Health Convention for the 21st Century (Duff et al., 2021)



#1 Authority

The governance structure for a global health convention—and its consequent treaties—should grant the necessary authority to one or more agencies—such as the WHO—to coordinate pandemic prevention, preparedness, and response efforts globally, including across regions, countries, and subnational jurisdictions if necessary. This authority could include an agreed upon ability to compel countries and other relevant actors to act and collaborate.

#2 Responsiveness

The global public health system—and its governing agency(ies)—should possess the capability to flexibly and rapidly respond to, instill protections for, formulate interventions against, and mobilize and deploy resources for a range of possible public health security threats and scenarios.

#3 Expertise

In a global public health system, one body should exist as the singular authoritative source for information, data, and technical assistance. This agency should possess appropriate technical expertise and must be able to communicate a clear and compelling message to the world.

#4 Evaluation

Built into a governing framework for a global public health system should be the capacity to objectively evaluate countries on their progress in achieving requirements, and the capability to assist in providing or coordinating remediation for identified deficiencies.

#5 Enforcement

Reform must equip a governing body (or bodies) with appropriate enforcement mechanisms. These may include substantial incentives for countries to cooperate and/or sanctions for noncompliance.

3. TEN RECOMMENDATIONS

#6 Autonomy

The governing body (or bodies) should be autonomous, meaning it has the freedom of self-governance and its decision-making processes are resistant to undue political pressures.

#7 Financing

An effective global public health security framework requires a sustainable financing system that protects the governing body or bodies from undue political influence, possible retribution, or the threat of inconsistent funding.

#8 Representation

A governance structure for a global public health convention must be representative of all countries and other relevant non-state stakeholders. The governing framework must possess a high degree of transparency and accountability.

#9 Multisectorality

A formal pandemic prevention, preparedness, and response system—including governing bodies—must involve multiple sectors at all levels of governance and action. In addition to national governments, participating actors may include the private sector, local governments, and civil society.

#10 Commitment

For a global health security convention to be effective, all relevant parties participating in the system—particularly individual countries—must understand the threat that infectious disease pandemics pose; accept the gravity of pandemic threats; acknowledge their own responsibility in contributing to effective prevention, preparedness, and response; demonstrate a commitment to these efforts; agree to comply with a global convention; fulfil their individual responsibilities to the global contract among nations; collaborate with other parties; and cede some degree of authority to a global governing body, thus permitting that body to effectively coordinate and intervene to prevent, prepare for, and respond to infectious disease outbreaks and pandemics.

RECOMMENDATION 1: AUTHORITY



The governance structure for a global health convention—and its consequent treaties—should grant the necessary authority to one or more agencies—to coordinate pandemic prevention, preparedness, and response efforts globally, including across regions, countries, and subnational jurisdictions if necessary. This authority could include an agreed upon ability to compel countries and other relevant actors to act and collaborate.

LIMITATIONS OF THE WHO & IHR

Participants identified constraints on authority within the current framework of global health security. Most of these concerns surrounded limitations of the World Health Organization (WHO), the World Health Assembly (WHA, or Assembly), the WHO Secretariat, and the International Health Regulations (IHR). The WHO was frequently described as a membership organization at the behest of the Member States that comprise the WHA. Participants noted that while the Assembly is the WHO's decision-making body, its delegates may not necessarily have the authority to grant certain powers to the WHO.

GLOBAL GOVERNANCE CHALLENGES

Global health security is currently in the hands of ministers of health – the customary country representatives to the WHA. Participants noted that in many countries, ministers of health tend to be less influential than other cabinet members. WHA delegates (i.e., ministers of health or their representatives) do not have the authority to grant on behalf of their countries the power to coordinate, sanction, or remediate deficiencies in pandemic prevention, preparedness, and response that impact all areas of their respective societies and economies. This implies that the kinds of changes that are required will be contingent on bringing leaders of states to the table.

The WHO Secretariat was also described as advisory rather than executive. Participants concluded that the WHO Secretariat cannot act or generate change where it is not explicitly authorized to do so.

**"THERE IS NO
STRONG CENTRAL
GOVERNANCE—
IT JUST DOESN'T
EXIST."**

"The WHO can influence. The issue is, you need a body that mandates."

"[The WHO] always says that it advises and lets the countries decide."

"... the WHO has a lot of bureaucracy and a lot of people traveling in the world, but they don't have real actions in our countries."

"THE IHR PLACE THE BURDEN OF [IMPLEMENTING] PANDEMIC PREPAREDNESS SOLELY UNDER NATIONAL JURISDICTION. THAT IS THE SPIRIT OF THE IHR."

Our participants clearly articulated that the WHO is not adequately empowered with the authority to implement the IHR. It was noted that the IHR recognize nations as responsible for implementing pandemic preparedness and response measures. Participants also highlighted that the WHO Secretariat does not have the authority to enforce compliance with the IHR. They believed that these factors rendered the IHR voluntary.

Interviewees noted that some countries may not perceive compliance with international health security regulations and standards to be in their best interest. Individual countries may weigh the

costs and benefits of complying, perhaps not recognizing or valuing the significant threat of infectious diseases and the urgent action required. Country noncompliance with pandemic preparedness was therefore identified as a potential risk to the global community as a whole (See *Recommendation 10*).



As potential workarounds, participants identified several necessary or desirable authorities for a supranational pandemic preparedness and response framework. They noted the importance of a global purview, with authorities to surveil, share data, and coordinate across countries. They also described existing structures and strategies to enhance the authority of a governing body that would provide necessary powers, such as the ability to lead countries and other relevant agents to act and collaborate. This would require countries to share some degree of sovereignty and grant such authorities to a global health architecture.

"COUNTRIES NEED TO BE SUFFICIENTLY ENLIGHTENED TO BE WILLING TO SHARE THEIR SOVEREIGNTY, AND THAT'S A GEOPOLITICAL CHALLENGE OF THE HIGHEST ORDER."

To effectively prevent, prepare for, and respond to pandemics, several participants suggested amending the IHR to strengthen the WHO. There were also suggestions to create an agency for certain duties. For example, the WHO could remain the single voice that issues recommendations and guidance and provides

technical assistance, while another body might be responsible for enforcement of the IHR. Regardless, all interviewees believed that a governing body(ies) should have certain specified authorities.

Several participants proposed strengthening or restructuring the WHO by granting more powers to the director, or by creating a new quasi-independent agency within the WHO modeled after the UN Security Council. Others suggested using a UN agency that reports directly to the UN Secretary General or to the UN Security Council.

"... we are going to need to actually strengthen WHO considerably. But clearly that's not enough in its own right ... [there] is need for real global oversight of all this. There has to be something bigger, which is where the UN Security Council comes in."

GOVERNANCE SOLUTIONS

“I do think that WHO can’t do all this on its own.”

“It needs to [be] an agency that has global reach ... I don’t think it’s a question of creating a new agency because ... that would have to have the same properties of UN agencies.”

“The great thing about the UN is it actually does cover every country.”

“ULTIMATELY, I THINK THE RESPONSIBILITY LIES AT UN LEVEL, AND IT IS AT UN LEVEL THAT ENFORCEMENT MECHANISMS NEED TO BE CREATED.”

Other potential models for strengthening the governance of preparedness and response to address international issues of global health included NATO, UNAIDS, the World Trade Organization, the Office of the United Nations High Commissioner for Human Rights, the UN Security Council, and the International Atomic Energy Agency. Several participants suggested forming a multilateral organization such as The Global Fund to Fight AIDS, Tuberculosis and Malaria, or expanding the Global Fund to incentivize LMICs to collaborate (*See Recommendation 7*).

One participant suggested restructuring the global pandemic preparedness and response architecture with separate autonomous units responsible for each required activity (e.g., surveillance, pandemic response, evaluation, imposing sanctions):

“Just like at the national level, you have an umbrella entity which is typically the ministry of health, but within that you can have autonomous agencies in charge of surveillance but then also in charge of imposing limitations, regulating and imposing sanctions. That is the model that is needed at the global level.”

Participants described challenges associated with intranational bureaucratic and jurisdictional authorities in coordinating preparedness and response activities across multiple levels of government. They noted that public health activities—and health systems specifically—typically operate on subnational levels, such as provincial or local levels. This poses challenges to global governance systems that interact on the national or supranational levels:

JURISDICTIONAL CHALLENGES & SOLUTIONS

“THE PROBLEM IS THAT WHEN YOU DO ANYTHING IN INFECTIOUS DISEASES, YOU HAVE TO GO THROUGH THE HEALTHCARE BUREAUCRACY OF THE COUNTRY. YOU DON’T HAVE A WAY AROUND THAT.”

“[COVID-19] tests could not be rolled out because of jurisdictional issues about who could control such things. And those [jurisdictional issues] need to be bypassed.”

“In federal systems, national governments are not responsible for health. In most countries, provincial authorities are responsible for health. So, there isn’t either the authority or the jurisdiction for national governments to be engaged in public health.”

“... provincial jurisdictions have some degree of autonomy over the decisions they make and the resources that they have ... So, the biggest problem with adherence really is the provincial (rather than national) structure of healthcare and public health.”



In describing characteristics of a global public health convention, a central theme that emerged was the capacity to coordinate executive action. Most described the necessity for the framework to supersede other authorities when necessary. Some specific examples of possible international authorities included systems for communication and distribution of information, and the bypassing of national or within-country jurisdictional authorities during global public health emergencies.

“I think [a global convention] would need to create clear policies that allow for rapid coordination that bypasses what otherwise are slow and inefficient regulatory processes that hinder rapid action.”

“... respond and coordinate through bypassing or putting on hold existing regulatory and approved structures ... [Jurisdictional limits] might make sense under normal conditions but they’re untenable in time of an emergency.”

RECOMMENDATION 2: RESPONSIVENESS



The global public health system—and its governing agency(ies)—should possess the capability to flexibly and rapidly respond to, instill protections for, formulate interventions against, and mobilize and deploy resources for a range of possible public health security threats and scenarios.

A challenging but essential quality of an effective global public health architecture is the executive capabilities to prepare for and respond to a variety of public health scenarios in a timely and well-coordinated manner. Participants noted that a coordinated, flexible, and rapid global public health response system is currently lacking.

“... there needs to be adopted, by WHO and all of its regional offices, a clear emergency mode, in which there is centralized control in the case of a declared emergency, where the institution can operate as one, rather than operating as many.”

“I think there has to be an agreement that, in the case of a global emergency, the central office, with the global governance mechanisms that exist, assumes responsibility.”



“... there is no entity in charge in any way of trying to figure out where resources should be directed and how to bolster production in one place and then transfer those goods where they’re needed in any kind of rational way.”

Several participants suggested that an authoritative agency, such as the WHO, should also be more active in implementing its recommendations and in responding to global public health security threats.

“One revelation that I was touched [by] is when one African minister stood up and said, ‘But you are the expert. You know what’s happening. Why didn’t you help us?’”

“They say, ‘Okay, we have a framework,’ but then ‘it’s your business, it’s your problem, you are the government, and you have to make the decisions.’ They don’t have to be only an external advisor ... they need to work with the countries and the provinces more. They have to have the ability to collaborate with the country, to help the country to implement the recommendations.”

EXECUTIVE CAPABILITIES

"THE PANDEMICS WE ARE SEEING TODAY MOVE WITH INCREDIBLE SPEED. THAT MEANS THAT WE CAN'T START FROM SCRATCH. RATHER, WE MUST START FROM A PLACE WHERE THE PREPARATION HAS BEEN DONE TO PERMIT US TO SPRING INTO ACTION."

Participants acknowledged that a fundamental task for a functional global public health architecture is the ability to respond across numerous jurisdictional levels. One participant encouraged *"a decentralized capacity that would rely on national capacities to support an international response."*

Interviewees also noted the difficulties of creating a universal framework for global public health security in a world of diverse needs, priorities, and conflicting interests between countries. For example, low- and middle-income countries (LMICs) may face different challenges in establishing core public health capacities and may face even greater challenges during an epidemic or pandemic. Several participants emphasized the capability to meet these diverse needs at any given stage of pandemic preparedness or response, to instill protections upon countries, and to administer resources for a range of possible scenarios.



STEP
4B

ENCODING
AREA

STEP
4A

VACCINATION
AREA

One specific example of a suggestion regarding expanding flexibility in preparedness and response was to substitute the provision of the binary declaration of a Public Health Emergency of International Concern (PHEIC) under the IHR for a warning system on a gradient that more accurately reflects how pandemics evolve.

“... the process for public health declaration of Public Health Emergency of International Concern, the PHEIC process, is completely unfit for purpose and really does not help the situation at all and should be replaced with a much more graded way of declaring outbreaks rather than the essentially all-or-none binary process that the PHEIC represents.”

Participants also suggested that flexibility be rooted in planning, risk and contingency management, and readiness to respond with *“a range of actions that cover a broad swath of possibilities.”* Looking at pandemics through the lens of management, one participant stressed the

need for readiness of dedicated teams for logistics, operations, and communications as part of a robust emergency response mechanism.



RECOMMENDATION 3: EXPERTISE



In a global public health system, one body should exist as the singular authoritative source for information, data, and technical assistance. This agency should possess appropriate technical expertise and must be able to communicate a clear and compelling message to the world.

Participants discussed the need for a body to possess a wide range of technical expertise in pandemic prevention, preparedness, and response. This involves acting as the authoritative source for information, expertise, and technical proficiency, such as is now the case with the WHO. A singular authoritative source can also facilitate a clear and consistent channel of information to prevent confusion regarding accurate or relevant data.

"IT CAN BECOME REALLY DIFFICULT FOR WHO TO ONLY BE CHAMPIONING TECHNICAL EXCELLENCE WHEN IT'S [ALSO] TRYING TO CRAFT A POLITICAL COMPROMISE AT THE NEGOTIATING TABLE."

A central body should be empowered to create and communicate the expectations and standards for the world, free from undue political pressure or consequences. Participants also discussed the existing

perception that the WHO has a continual conflict of interest between communicating information and managing the pandemic response. Several noted that this has led to distrust by the public and other institutional actors.

"... the accusations against the WHO and how the WHO was, in a sense, favoring China, not being as demanding and as exacting as it could have been in terms of getting information from China ..."

"The whole model is premised on trust and cooperation, right, but you don't always get that. That trust is not always established, and the cooperation doesn't always occur."

To this end, participants suggested having separate entities to carry out the technical/scientific aspects and the interventions required from a governing body.

TECHNICAL EXPERTISE

Several participants noted the importance of messaging within an effective global public health security architecture. The central mission of this messaging surrounds “*galvanizing attention*” to the practical imperative of global health security. This may include the authority to convey the global agenda during a pandemic.

Participants stressed the need for messaging to be compelling, authoritative, and consistent. They described an imperative that the framework communicate clear expectations for countries and citizens regarding public health security benchmarks and activities. It was also suggested that the body(ies) responsible for messaging and communication strive to actively shape the public conversation on pandemic preparedness and response. Consistent public discourse allows for an appropriate sense of urgency to be maintained globally. Additionally, awareness and concern among the public are vital because they can facilitate compliance and encourage the implementation of recommendations outlined by the global governing body.

“Countries need to be convinced that unless they [comply], they are going to hurt.”

“I think you need a sense of urgency, a popular movement supporting sense of urgency, and pressure on countries to come to a table to agree.”

“We have to also make sure that the messaging is clear from an awareness and activist perspective—that if somebody fails in the network of countries that need to be prepared and react, if somebody fails, we all pay the price.”





Communication chains should also be multidirectional. Information should come not only from the global authority to countries, but also from provincial and local public health bodies to the global authority. The need for messaging at all levels is sufficiently urgent that it requires recruitment of multinational partners in communication, including local leaders and celebrities.

“If, for instance, I don’t believe in the governments of the day, I won’t believe whatever they communicate to me. But if, for instance, my traditional leader, my village chief, tells the people that this thing, this virus, this disease has come, and these are the protocols we need to practice to [stay] safe and to keep everybody alive ... I will listen more to that traditional ruler than even the mayor coming to the village to talk to them.”

“We need to involve literally every leader in the country. We may not see them as formal leaders. Yeah, they may be in the informal sector, but they are very influential, in fact, more influential than even the political leaders.”

RECOMMENDATION 4: EVALUATION



Built into a governing framework for a global public health system should be the capacity to objectively evaluate countries on their progress in achieving requirements, and the capability to assist in providing or coordinating remediation for identified deficiencies.

A consistent theme surrounding the characteristics of a global architecture for managing pandemics involved the power to evaluate countries on their compliance and to outline steps needed to remediate any deficiencies in meeting international standards. Participants described an effective architecture (i.e., body or bodies) for global public health security as having the mandate to objectively monitor and evaluate—and possibly inspect—preparedness and response according to the specified public health pandemic prevention requirements.

Reflecting on current practices, several participants noted that the WHO is not designed or empowered as an institution to independently monitor and evaluate countries. They also argued that the institutional design of the WHO does not enable it to hold countries accountable for the results of these evaluations.

“It is difficult for the World Health Organization to criticize its member states and to hold its member states accountable. I would argue that they’re poorly set up for it, and indeed, it might not even be their role, even though many people look to WHO to be that arbiter of what is right and wrong and to call out member states.”

**“THE WHO IS
NEVER CRITICAL
OF ANY COUNTRY.”**

“By its own charter, WHO can’t denounce a country for failing to be transparent about an emerging disease. It’s a really difficult thing for the institution to do.”

COMPLIANCE EVALUATION & REMEDIATION

It was noted that IHR compliance is monitored through self-reported data that are not reliably confirmed. Known as the Joint External Evaluation Exercises (JEE), the current practice relies mostly on data provided by the country being evaluated. Such exercises, which are mostly dependent on self-evaluations, may not adequately determine a country's ability to achieve effective prevention, preparedness for, and response to infectious disease outbreaks, public health emergencies of international concern, and pandemics.

Several participants advocated for objective external evaluations in which data for adequate monitoring of the country's progress toward compliance with IHR can be obtained directly by an external agent. They proposed creating an independent body with international representation to inspect countries' compliance with regulations (See Recommendation 8).

"We need data that can be corroborated through external evaluation."

"Independent evaluation can confirm whether in fact [countries] are on track towards strengthening coordination, surveillance, laboratory issues, health service provision, risk communication ..."



The authority to monitor and evaluate country capacity and preparedness would require clearly articulated goals and measurable programmatic targets. One suggestion was establishing targets for countries' spending on pandemic prevention, preparedness, and response, paralleling the Organization for Economic Co-operation and Development targets for country spending on international development assistance as a percentage of GDP. Spending a certain amount of money, however, cannot be equated with spending it on doing the right thing. Therefore, such targets would need to be accompanied by specific goals and indicators and be evaluated externally. This would involve collaboration with countries to ensure that spending is directed towards approved and appropriate sources that could contribute to better preparedness, prevention, and response.

INDEPENDENT EXTERNAL EVALUATION

One specific example of a possible dispute resolution process or body included the creation of a committee of legal experts to interpret laws such as the IHR and adjudicate conflicts between countries and between the WHO and Member States.

“Having an authoritative group to clarify obligations, to respond to queries and to make pronouncements at times of emergency, that would have all sorts of consequences for motivating states to act in preparation for and response to global health security threats.”

[illegible]

RECOMMENDATION 5: ENFORCEMENT



Reform must equip a governing body (or bodies) with appropriate enforcement mechanisms. These may include substantial incentives for countries to cooperate and/or sanctions for noncompliance.

Country non-compliance with pandemic preparedness and response guidelines and regulations was identified by participants as a major risk to global health security. Many remarked that the WHO's main legal instrument for countries' preparing and responding to outbreaks, public health emergencies of international concern, and pandemics (the International Health Regulations or IHR, 2005) lacks enforceability mechanisms. One participant described this feature of the IHR as *"a design failure."*

"THE IHR ARE MORE OF A GUIDANCE THAN THEY ARE REGULATION."

"There's not a real obvious consequence to [countries] saying, 'We don't care to comply with the IHR.'"

"We need to find a way to make ... [country leaders] understand and support why you should adhere to the International Health Regulations and what consequences there are if you don't."

"The WHO International Health Regulations should have sanction mechanisms – similar to the ones from the World Trade Organization. ... So, it's not only a system of protections, but also a system of sanctions in case countries violate the common good."

"The IHR should be given more teeth – punishment for countries that don't follow."

Numerous participants reflected that prior panels and commissions have made recommendations on enforcement, including those following the 2002-2003 SARS epidemic and the 2014-2015 Ebola outbreak. However, little progress has been made in adding enforcement mechanisms to the IHR or WHO guidelines.



"I DON'T BELIEVE THAT WE HAVE ANY GOOD MECHANISM IN THE WHO RIGHT NOW WHICH TELLS ANY OF US HOW WELL PEOPLE ARE COMPLYING OR NOT."



A mandatory issuing of public reports on each country's progress toward IHR or other preparedness and response benchmarks might influence compliance. Participants described the power of making country evaluation outcomes public, with reputational considerations, international standing, and peer pressure prompting national action. Some suggested tying the results of independent evaluations of health security compliance, such as the 2019 Global Health Security Index, to benefits and penalties (2020). These, however, would need to be expanded to better measure country capacity to respond to public health emergencies, as the GHS Index most accurately predicts preparedness. However, as we saw with COVID-19, country ranking in preparedness does not necessarily translate to effective mobilization of resources (Abbey et al., 2020). Consequently, how we measure preparedness requires considerable updating that builds on what we have learned from the COVID-19 pandemic.

"As part of a treaty, countries [would need to] agree to be reviewed every few years by a collection of other countries who go in and do assessments, and reports get posted online for civil society and news media. That can put pressure on a country."

"Making data publicly available about a country's readiness for the next big pandemic and getting that information into the hands of not just public health folk but political leaders and affected communities, I think ultimately is what will lead to some level of change as far as compliance with these international health security standards."

Several participants reiterated that an effective global public health architecture requires strong bodies working in synchrony, with an authority to compel countries to act and collaborate. This includes the need for enforcement strategies through incentives and benefits for countries, as well as penalties or sanctions for noncompliance.

"THERE SHOULD BE A WHOLE HOST OF ECONOMIC REWARDS FOR COUNTRIES THAT BEHAVE WELL AND SANCTIONS FOR THOSE THAT DON'T BEHAVE WELL."

"You would need to have an agency ... set up with the powers to both create positive incentives but also to impose sanctions."

"... creating the positive and negative incentives to make sure everyone complies I think is absolutely necessary."

"We have to have some benefits to adherence or some negative consequence to non-adherence."

"... having laboratories, being able to produce health products that can then help develop the economy. ... It's a kind of incentive that's not just economic aid, but its technical capabilities."

Remediation of countries might include tangible resources, such as financial aid or technical assistance in establishing core capacities for pandemic preparedness or support with response. Benefits might also include access to data and information, or other services provided by a governing body. Participants described the need for benefits to be provided through all stages of infectious disease prevention, preparedness, and response. Some may be built into participation in an international convention, while others could be administered as rewards for compliance.

INCENTIVES & BENEFITS

Participants noted that some incentives may extend beyond the realm of infectious disease preparedness, prevention, and response. Participants



discussed other intangible incentives for compliance with a compact or convention, such as increased participation in global governance, protection from penalties, and greater international standing. Some participants described the importance of rewarding countries that provide transparent information about infectious disease outbreaks. Others suggested providing immunity from imposed

penalties or access to insurance that would hold the country harmless for the economic losses which would result from declaring an outbreak.

“To get people engaged, sometimes that kind of economic incentive is critical, and so as the moment is still very present in everybody’s mind ... this is the moment to make sure that they understand that this is one of those never again moments.”

Additional incentives noted by participants included:

- *Granting direct financial subsidies to countries to increase public health capacities*
- *Providing low interest loans or grants to countries for preparedness, response, and recovery activities*
- *Factoring into countries’ international credit ratings their full pandemic preparedness and health security human capital, with better ratings for complying countries*
- *Evaluating countries and publicly publishing reports and “scorecards”*
- *Enhancing voting rights or participation in global governance for complying countries*
- *Cancelling debts*
- *Supporting research and development*

Many participants discussed sanctions as a possible mechanism for enforcement. Penalties for noncompliance included public reprimands, economic sanctions, and the denial of benefits to noncomplying countries. Some participants did not agree with the use of penalties as an effective enforcement mechanism, while others discussed the difficulty of both getting countries to agree to penalties and enforcing those penalties. Participants mostly discussed penalties and sanctions broadly, though some did provide specific examples. For instance, many identified economic sanctions as having the most force.

"A TREATY THAT HAS NO CONSEQUENCE IF YOU BREAK IT FLAGS THAT THIS TREATY IS LESS IMPORTANT THAN OTHERS THAT DO HAVE CONSEQUENCES."

SANCTIONS OR PENALTIES

Disagreement with the use of penalties might stem from the hesitancy for some countries to extend authority to a global governing body. However, this issue might also relate to the recognition that some countries may demonstrate difficulty in financially complying with certain regulations. In this circumstance, administering economic penalties might then be interpreted as harsh or unnecessary. To avoid this, it was noted that penalties must be specific, clearly articulated, and agreed upon prior to being imposed. One participant also mentioned tailoring penalties to countries, because universal penalties may not be appropriate or effective in every instance. Such flexibility might therefore prevent penalties from greatly burdening LMICs which could be ruined by economic penalties.

"... we need to be sensitive to the fact that every country is in a different context and position, and we'll need to adjust for that, but there need to be some teeth to this. Otherwise, why do it?"

When describing effective strategies for promoting compliance, while most participants agreed that incentives were more desirable than



penalties, some felt that compliance could not be adequately achieved without some sort of sanctions.

“There has to be consequence. If there is no consequence, then we can have guidelines, but we’re not going to get adherence from all partners.”

Interviewees noted that other sanctions could include:

- *Economic penalties such as temporary exclusion from systems of sovereign bank transfers or favorable rates in sovereign loans*
- *Restricted access to development funding*
- *Tariffs*
- *Embargos*
- *Public reprimands (especially describing detailed critique of pandemic preparedness and response)*
- *Travel restrictions*
- *International trade restrictions*
- *Withdrawing voting rights or participation in global public health governance*
- *Increased security checks at points of travel or trade*
- *Using compliance with preparedness and response guidelines as a criterion for international financial ratings*



RECOMMENDATION 6: AUTONOMY



The governing body (or bodies) should be autonomous, meaning it has the freedom of self-governance and its decision-making processes are resistant to undue political pressures.

The degree of autonomy of a governing body with independent decision-making powers was discussed by many participants. They underscored that for a governing body to be effective, especially in times of crisis, it must be insulated from undue political influence.

"WE NEED AN AGENCY INDEPENDENT ENOUGH TO NAME AND SHAME COUNTRIES."

"It has to have freedom to operate and to be objective, and that might not always make everybody happy, but that's what's needed in order to have results or observations or recommendations that actually have value."

Several participants discussed autonomy in the context of the World Health Organization, which participants unanimously believed to be subject to political pressures that interfere with effective execution of its core mission. The WHO's design as both a technical agency and a political agency was said to present challenges to effectively accomplishing goals when these agendas diverge.

"The architecture of the WHO puts decision-making power in the hands of the WHA, comprised of health ministers who represent country priorities rather than global priorities."

"I think it's an institutional design setup problem, that it's one agency designed to be two things, which probably should have been split into two."



FREEDOM OF SELF-GOVERNANCE

Several participants noted also that because the Global Preparedness Monitoring Board (GPMB) is situated within the WHO, it is subject to the WHO's internal politics and external pressures, which detracts from the Board's function as the independent accountability body it was designed to be.

"The Global Preparedness Monitoring Board should not sit within WHO, should not have the sort of standard cast of characters as members."

"I don't know that sitting in WHO the way [the GPMB] is, even though it's a secretariat that's supposed to be independent, it will not be perceived as being independent enough."

"It's hard to say that you're sitting at the WHO headquarters and you're not influenced by the WHO."

"THE WORLD HEALTH ORGANIZATION IS A POLITICAL ANIMAL. THE SELECTION OF THE DIRECTOR-GENERAL IS POLITICAL."

Political interference tied to financial contributions emerged as a formidable obstacle to a global body responsible for pandemic prevention, preparedness, and response-related activities. Participants stressed that the WHO Member States that make the greatest voluntary financial contributions are perceived to influence the WHO agenda with their money. Therefore, participants highlighted the importance of ensuring that a governing body would not be compromised by financial and political pressures.

“What independence can you have when you’re depending on the entities that you’re supposed to regulate for your own support? This would be equivalent to having the pharmaceutical and food industries fund the FDA [United States Food and Drug Administration].”

“[We need] something that is not subject to financial pressure ... well insulated from political pressure and is not subject to ... short-term thinking ...”

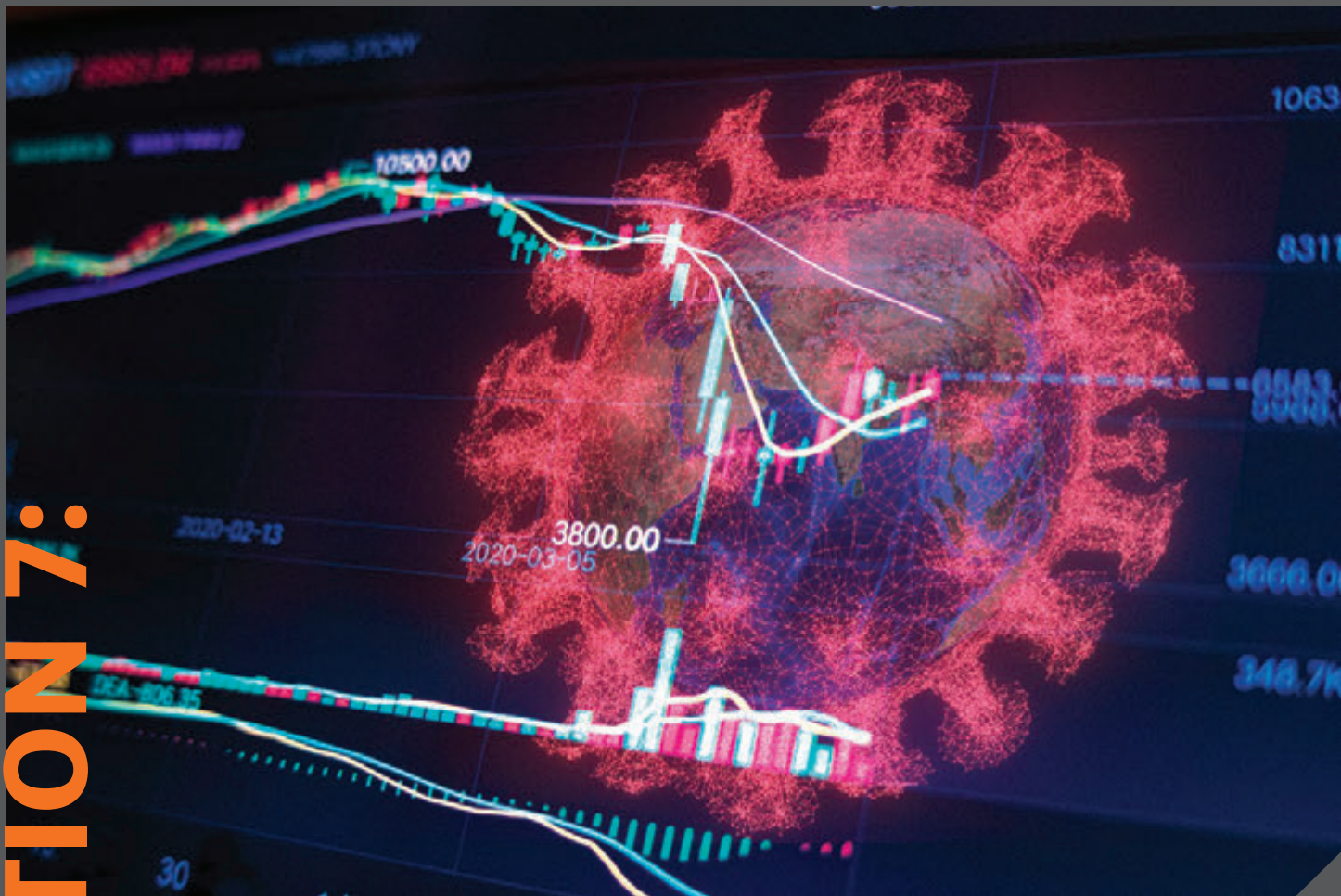
“For a body to be stronger, it has to have a strong voice, and a strong voice is usually defined in politics by strong finances.”

Interviewees discussed that countries have often pushed for control of the WHO to do their bidding. Several participants suggested that the political nature of the WHO has strongly shaped agency choices around leadership. Some also argued that this has inhibited optimal decision making and has overly influenced the organization’s agenda.

“People who are politically well-connected in their countries and can influence their ministries of health may be appointed to WHO posts. So there is a degree of nepotism ... unfortunately, it’s not always the best person that gets the job.”

Nearly all participants noted that no multilateral organization can realistically shield itself from all political pressures. However, several agreed that the lack of mechanisms to insulate from political pressures can hinder the WHO’s independence and effectiveness. Possible solutions presented by participants included creating a semi-autonomous and independently funded agency or department within the UN or under the WHO. Another potential solution discussed by participants was establishing a new body that is independent of the WHO and not subject to the influence of member countries. In addition, having funding come in the form of dues rather than contributions would alleviate the undue influence of large donors.

RECOMMENDATION 7: FINANCING



An effective global public health security framework requires a sustainable financing system that protects the governing body or bodies from undue political influence, possible retribution, or the threat of inconsistent funding.

Interviewees unanimously described the current global public health security infrastructure as chronically underfunded. This financial unsustainability was noted as a vulnerability to the entire global health system, particularly in terms of a flexible and rapid response to a pandemic threat.

"OUR COLLECTIVE GLOBAL INVESTMENT IN GLOBAL HEALTH INFRASTRUCTURE IS EXTREMELY SMALL COMPARED TO WHAT IT SHOULD BE."

"... the WHO has issued one plea after another for financing since this [COVID-19 pandemic] began, and not a single one of their pleas has been met with an appropriate level of support."

"The WHO needs to be independent ... the independence of the WHO [requires] that the money is not bound to a certain project, that [the WHO] can decide what has to be done, [and] how it can further develop global health or global health security worldwide."

FINANCIAL VULNERABILITY

In light of this, several participants discussed the current financial structure of the WHO. Participants noted that this structure depends on too many external variables over which the WHO has no control. An issue participants raised about the WHO's budget is that pledges for future funding may be withdrawn or delayed in order to place political pressure on the WHO. Participants also noted that the WHO financially depends on donations designated for specific activities or projects. As previously mentioned, donations currently comprise over 80% of WHO's budget (Sridhar et al., 2016). Indeed, several interviewees noted that the majority of the WHO's funding, being in large part based on voluntary contributions, limits the organization's ability to operate independently of donor interests and with flexibility, especially in times of emergency.

"The challenge the WHO faces is that in many respects, [four-fifths] of the contributions made by member states are purely voluntary, and that's why [the former U.S.] president [could] threaten to defund WHO. That should not be allowed."

“WHO and the global health system have a high dependency on two donors – the Gates Foundation and the United States Government. If Bill Gates woke up one day and said, ‘I’m tired of this global health stuff. I’m going to shift to climate change,’ or if the United States elected an insane person as president, we would suddenly see the [WHO’s] resources disappear, and the whole enterprise [WHO] would start crumbling.”

“Countries themselves are meddling with global decision-making.”

For a global governing body to effectively coordinate pandemic prevention, preparedness, and response, participants agreed that it must have sovereign control over a sustainable flow of financial resources. In most cases, participants described the need for an independent monetary fund and a sustainable financing system. However, participants had different views on how to procure funding.

Some participants believed funding should be contributed by member states—the countries that will benefit from the governing body’s efforts in health security. Some participants believed countries must agree to contributions that are compulsory, and that such compulsory contributions should be tied to voting rights at WHA, and/or participation in new agencies. However, further discussion would be needed to address countries that may be unable to afford mandatory fees.

“THE UNWILLINGNESS OF THE RICH WORLD TO PROVIDE THE FUNDING ON THE 0.7 FORMULA OR ADDITIONAL MONIES WHEN YOU HAVE A PANDEMIC ... IS REALLY THE ACHILLES’ HEEL IN THIS WHOLE DISCUSSION.”

“If it is an association of sovereign member states, the member states need to take responsibility for their organization and the first thing is, they have to fund it, and we need to stop thinking of the member states as donors. They are the members; they are the organization.”

“All of these agencies are dependent on the financial commitment by countries of the world to allow them to do the job that they’re supposed to do. ...”

“The WHO cannot just be bankrolled by one donor, say, the United States.”

Other participants proposed that sourcing funding from an international tax, possibly on aspects of international trade, travel, or financial transactions, would offer sustainable and adequate funding. Several noted that this would allow greater autonomy and immunity from member states’ political influence. Some also questioned whether at least some funding should come from philanthropic foundations, the private sector, or countries themselves in the form of a permanent endowment or *“trust”*. It was noted that this might allow the governing body further autonomy from individual member states’ political influence.

“We need to decide what aspect of global financial transactions can be routinely tied with a levee that is modest, that ... is sufficient to create billions ... of dollars that are in a localized, controlled, transparent, well-regulated, hopefully non-corrupt fund ...”

“The first thing we could have as part of this new covenant is a sustainable financial mechanism, a tax – and this has been proposed for a long time ... There are a number of proposals to create something parallel to what taxation would be at the national level.”

“Providing an endowment would help but just having a realistic budget that starts from the needs and the requirements and then moves towards a fee structure that’s fair: that recognizes the huge inequalities across the world and the income per capita.”



A minority of participants advocated for a global health security governance framework that relies more heavily on NGO funding and coordination, rather than national or intergovernmental organizations. Another possibility for securing sustainable and independent funding included establishing a fund like The Global Fund to Fight AIDS, Tuberculosis and Malaria, or extending the Global Fund's mandate to include pandemics.

RECOMMENDATION 8: REPRESENTATION



A governance structure for a global public health convention must be representative of all countries and other relevant non-state stakeholders. The governing framework must possess a high degree of transparency and accountability.

Participants identified entities that are necessary to global pandemic preparedness and response efforts. These included many international bodies and organizations involved in international agreements. Some of these actors already participate in this multilateral system, while others operate outside the current system. Nonetheless, their participation in a global health security framework was identified as desirable or necessary.

Participants often focused on certain parties they believed were essential to an effective global health security architecture, including individual countries, NGOs, or existing international public health bodies. Most participants identified the United Nations, the WHO, and other multilateral organizations as the major actors necessary for global health security, due to their existing global networks and governance infrastructures. Specific mentions include:

<i>Global Preparedness Monitoring Board</i>	<i>UN Security Council</i>
<i>UNAIDS</i>	<i>World Bank</i>
<i>UNESCO</i>	<i>World Trade Organization</i>

Participants emphasized the important role that peer countries and certain ministries play in a country's ability or decision to adhere to international guidelines regarding pandemic preparedness and response. Additionally, the involvement of larger or more powerful countries (i.e., G7 and G20 member states) was noted by participants as essential to promoting compliance globally.



"YOU NEED TO TRY TO GET BUY-IN OF THE LARGEST PLAYERS IN ALL OF THIS. IF AMERICA AND CHINA AGREED TO DO THIS, THEN A LOT OF OTHER PEOPLE WOULD COME INTO LINE, CERTAINLY THE REST OF THE G-20 COUNTRIES."

Participants suggested inviting well-respected leaders from participating countries and multilateral organizations, such as the United Nations Secretary General, executives of NGOs, and prominent voices in global



health, to participate in the various components of a global convention. They described formal and informal groups, which included civil society organizations, industry actors, private philanthropies, and the general public or citizens of countries.

"We will have to engage a lot more people from outside government. I'm talking about the media ... NGOs ... private businesspeople. I'm talking about religious organizations, because they tend to influence a lot more of the people than sometimes political parties. So, we need to bring all of these people on board."

Many participants asserted that a governing body ought to be adequately representative, both of member countries but also of other important stakeholders. Effective representation ensures the consideration of all stakeholders and parties that have a stake in effective prevention, preparedness for, and response to an infectious disease outbreak or pandemic. Most participants believed that such representation would create greater legitimacy for a governing entity.

While participants acknowledged the need for participation of influential world powers, they also emphasized the need *“to consider the input of LMICs in decisions regarding pandemic preparedness and response.”* Adequate representation in governing bodies would guarantee LMICs a voice in global public health security and would ensure the recognition of their specific needs and interests in the development of efforts dedicated to pandemic preparedness and response. Participants also discussed more inclusive representation as a way of preventing the more influential countries from creating universal regulations, which might not be attainable for all countries involved.

“[The convention] should think of the interest of low- and middle-income countries also ... Their voices should be there in this body also.”

“So, first there [must] be a change in the whole concept that it’s a handful of rich countries sharing their brilliance and passing on guidelines to the rest of the world.”

“We should leave some leeway for different countries to bring in their own different ideas on this, making sure that it’s created from the bottom up and not [top]-down to make sure that there is true buy in from countries, because if they don’t buy in, it will not be successful.”

“In the present international system there is a very strong tendency for the donor nations—the wealthy nations—to appropriate discussions and marginalize the countries who are significantly at risk and who need assistance.”

INCLUSIVE REPRESENTATION

“One of the major challenges low and middle-income countries face is to be made a part of the deliberations around the priorities in a pandemic or in a challenge for pandemic preparedness.”

“I find it really hard to believe that in the post-globalization world that we’re in now there will be a really effective effort to create a north-south dialogue, a rich country-poor country dialogue, that results in equitable distribution of vaccine and, if there’s effective treatment, of those treatments.”

Participants suggested that for various reasons, representation should extend beyond member countries and UN agencies to include civil society and NGOs. One participant emphasized that local institutions—the ones carrying out the work—have historically been excluded from conversations regarding pandemic response efforts. Additionally, participants noted the importance of securing leadership outside of public health to ensure various sectors will be involved.

“You want to involve civil society and the NGO community ... There are not that many pandemic[-focused] civil society organizations. So, I do think it’s going to require science intersecting with professional organizations intersecting with bodies that represent people who feel ill-served by the status quo.”

“There are any number of bodies that are responsible for developing policy and implementing it and supporting the implementation of policy at a subnational level that could be tapped.”

“The new agreement should make provisions for new non-governmental stakeholders. ... They may be business, private businesspeople, researchers, NGOs, pharmaceutical companies, human rights groups. People who will bring their knowledge, expertise, and interests to bear more on the work of the WHO.”

“When the government has no credibility either because it’s covering up or because it’s seen as having another agenda, then people won’t listen and then the disease is spread far more rapidly. That’s part of why it’s such an important role for civil society.”

Several participants noted the importance of transparency in implementing a global public health convention. One participant stated that a new convention *“would require a level of transparency on the order that we haven’t seen.”* They stressed the need for transparency throughout every level:

- *Open and transparent data sharing*
- *Thorough and objective evaluations of countries’ preparedness levels*
- *Accuracy in reporting about infectious diseases, and*
- *Transparency in decision-making processes and the way resources are distributed.*

Participants also highlighted the importance of achieving transparency at the level of the governing body itself. Some suggested the need for an independent *“watchdog”* agency tasked with monitoring a governing body responsible for global public health security.

“I think you need the official agency that can hold governments accountable, and then you need a watchdog that can hold that agency accountable.”

It was noted that together with adequate representation of stakeholders, transparency and accountability might generate greater trust in a governing body, improve country compliance, and strengthen the governing body’s effectiveness in responding to PHEICs.

“A robust pandemic response requires that we expand the circle of institutions that are engaged in strengthening and holding us accountable.”



TRANSPARENCY AT EVERY LEVEL

"A NEW SYSTEM HAS TO BE TOTALLY TRANSPARENT."

Additionally, some participants spoke to domestic policies incentivizing transparency and timely reporting through financial protection for individuals and industries that may face negative financial and social consequences from early disclosure of an outbreak. One participant



highlighted the negative impact that may affect one working in the animal husbandry sector:

"The last thing [people] want to do is report that their birds [or] chickens are sick, because then the government is gonna kill all the chickens and take away their livelihood. You need to

create a financial mechanism that protects individuals and countries from the negative financial implications of being transparent and timely in reporting."

RECOMMENDATION 9: MULTISECTORALITY



A formal pandemic prevention, preparedness, and response system—including governing bodies—must involve multiple sectors at all levels of governance and action. In addition to national governments, participating actors may include the private sector, local governments, and civil society.

A central theme of the interviews surrounded the involvement of other sectors beyond public health in a global public health convention. Participants noted that the public health sector alone is not enough to adequately prepare the world for a pandemic.

MULTISECTORAL ISSUES & CONSEQUENCES

"GLOBAL HEALTH IS NOT ONLY A HEALTH ISSUE. THIS IS A MULTISECTORAL ISSUE WITH MULTISECTORAL CONSEQUENCES."

"Heads of government have to convince themselves for preparedness, for implementing their obligations to the IHRs."

*"... there's so much more than public health or even health services ... because you've got all of the economic issues, and you've got all of the food issues, and then you've got the behavioral issues about how **[and]** what you can do in your societies."*





Many noted the importance of involving all sectors—not just health—that may have a stake in pandemic prevention, preparedness, and response. Most participants identified the private sector—including transnational businesses across several industries—as a requisite partner. These industries need not be exclusively global; relevant parties on the national, provincial, and local level must also

be encouraged to engage in these activities. Specific examples included the hospitality, lodging, restaurant, travel, retail, and food and agriculture sectors.

“Say to the global investment community, to currency markets, financial investment, hedge funds, banking—the entire monetary enterprise—say to them, ‘Well, [in only six weeks in early 2020] you lost 20-25% of all global wealth. Want to go through that another time? Another time? Another time? Or do you want to see that your financial stability depends on not having these kinds of events occur?’”

“... for the finances of countries, that we need kind of a within-country, multisectoral approach to look at public health security and then move that to the global level.”

“There is a very big role in this for the food and agriculture organizations ... because of the animal to human transmission, they could be doing much more about what is appropriate in the management of animals, the killing of animals, and the food security end. They would need to be given a stronger mandate to do all that.”



Participants asserted that the responsibility for pandemic preparedness and response should not fall solely on a given country's health ministry, but rather that Heads of State and Government must be involved to bring together other government ministries and departments. What is needed is a whole government approach. Additionally, because many industries experience the consequences of an infectious disease pandemic, it was suggested that these groups should also participate in preparedness and response efforts.



“When we think about an organization or an initiative to prioritize this area that we need to include not just ministries of health but defense, state, and even treasury because they are all affected by pandemics.”

“The one group that still gets listened to pretty effectively is the military. If the military’s job is defense of the nation, then you can imagine that the military saying, ‘We really need to build up our infrastructure on this.’”

Of note, one participant believed that a challenge in accomplishing multisectoral partnerships is that different international institutions possess different legal mandates. Other participants highlighted that there is no overriding governance framework to compel the type of inter-sector, inter-agency cooperation needed. Potential solutions discussed by participants included:

- *Establishing purposeful avenues for input from all parties, with clear responsibilities and lines of demarcation*
- *Identifying the roles and responsibilities of parties involved, with mechanisms for accountability*
- *Establishing an international legal framework for cooperation between institutions*
- *Standardizing policies and procedures where possible*



Participants noted that a diverse, multisectoral coalition of actors across local, regional, national, and international levels would show commitment to re-conceptualizing infectious disease outbreaks as global multisectoral, economic, and security threats. It was suggested that this may be one of the stronger approaches for making global public health security a global, multisectoral imperative.



RECOMMENDATION 10: COMMITMENT



For a global health security convention to be effective, all relevant parties participating in the system—particularly individual countries—must understand the threat that infectious disease pandemics pose; accept the gravity of pandemic threats; acknowledge their own responsibility in contributing to effective prevention, preparedness, and response; demonstrate a commitment to these efforts; agree to comply with a global convention; fulfill their individual responsibilities to the global contract among nations; collaborate with other parties; and cede some degree of authority to a global governing body, thus permitting that body to effectively coordinate and intervene to prevent, prepare for, and respond to infectious disease outbreaks and pandemics.

A strong central theme throughout the interviews involved the responsibilities of individual countries. Participants noted that for a global health security convention to be effective, all stakeholders must uphold their end of an international health agreement. This included accepting the gravity of pandemic threats; acknowledging their own responsibility in contributing to effective prevention, preparedness, and response; demonstrating a commitment to these efforts; and complying with the requirements of a global convention. While most participants discussed these responsibilities broadly, several discussed them within the context of individual country circumstances, acknowledging distinct challenges (e.g., financial, political) that countries may face in upholding these responsibilities.

ACCEPTING GRAVITY & RESPONSIBILITY

Accepting gravity and responsibility refers to individual countries recognizing the importance of pandemic prevention, preparedness, and response. Participants stressed that this requires acknowledging the threat of rapid international spread of infectious diseases and taking necessary actions to prepare for and respond to outbreaks that have pandemic potential. These discussions were often situated in the context of COVID-19 or previous pandemic threats, such as SARS, influenza, Ebola or Zika. It should be noted that because the interviews were conducted at the onset of COVID-19, many participants referenced the pandemic as a real-life lesson that demonstrates to countries the severe human and economic costs of a pandemic. COVID-19 revealed the *“highly compressed”* timeframe of pandemic spread that can only be contained with advanced planning, full preparedness, and immediate action.



“I think this moment in time holds much more potential to be able to look countries in the eye and say, ‘We need to agree to [comply], or we’re all going to die.’”

"EBOLA AND ZIKA AND NOW COVID-19 DRAW NECESSARY ATTENTION TO THE NEED TO STRENGTHEN PANDEMIC RESPONSES ON EVERY CONCEIVABLE LEVEL."

"[I hope] the economic losses ... [will] shake the countries of the world to the point where they realize that we cannot continue with business as usual."

"God forbid, [if] this virus [SARS-CoV-2] mutated with the level of infectiousness it has and became slightly more lethal than it already is, this could [become] an existential threat for humanity in a very short period of time ..."

In addition to accepting the gravity of the situation, participants emphasized the nature of infectious diseases, the interdependence between countries, and the interconnectedness of people and other species in disease transmission. To address these perspectives, participants emphasized promoting solutions that utilize a global systems approach.



"This is an intranational problem that [needs] an international solution."

"We live in a world that's inevitably interconnected and I think most people in the world would not give up the advantages of that interconnectedness. It carries a cost and one of them is the spread of disease."

A common theme that emerged from the interviews was the need for countries to empower a global authority to set and enforce standards and to lead and coordinate global preparedness for and response to outbreaks, PHEICs, and pandemics. Many participants believed that to achieve this, countries would need to cede certain authorities and *“some of their national control”* to a global governance body. One participant remarked that while it is yet to be seen to such a degree in health, *“countries have agreed to cede authority to an agency or mechanism that enforces international regulations ... on other topics such as trade and financial transactions.”*

“[USING THE EXAMPLE OF THE] EUROPEAN UNION ... THESE ARE SOVEREIGN NATIONS WHO HAVE GIVEN UP A LOT OF THEIR POWER BECAUSE OF WHAT THEY PERCEIVE TO BE THE ECONOMIC BENEFIT OF A COMMON MARKET.”

“Countries would have to agree to give up authority—authority that is agreed upon—to a global body.”

“... the member state would have to agree to share their sovereignty.”

“... a new covenant where countries agree to share their sovereignty, where they agree to subject themselves to sanctions if they don’t [comply].”

Ceding authority to a global body was deemed essential to improving pandemic preparedness and response in a way that would benefit the greatest number of people across the most countries. Participants conceptualized the ceding of authority not as a loss of sovereignty, but as a sharing of sovereignty between countries, inclusive of agreeing to sanctions for noncompliance.

“[Countries] need to be convinced that the alternative [to international collaboration] is untenable for them.”

“Both the origin of [international health] problems and the means to solve them require going beyond the limits of national sovereignty.”



"... THE TIMEFRAME OF THE THREAT IS HIGHLY COMPRESSED IN A PANDEMIC, AND I THINK THAT IS THE MOTIVATION FOR INDIVIDUAL COUNTRIES TO POOL THEIR SOVEREIGNTY, NOT GIVE IT UP BUT POOL IT SO THAT THEY CAN HAVE EFFECTIVE COLLECTIVE ACTION AGAINST A COMMON THREAT THAT COULD WIPE EVERYONE OUT."

Participants discussed the need for countries to fully comply with global preparedness and response regulations—such as the IHR—and to actively collaborate with other countries and a central governing agency and/or system in preparedness and response activities. One participant emphasized that there is a legal basis for countries to work together and support one another in achieving and sustaining global health security goals:

“[IHR] Article 44 is about the duty to collaborate and assist each other in fulfilling the legal obligations that the International Health Regulations require.”

In some cases, participants discussed compliance with specific components of a new global health security framework, such as a governance structure rooted in evaluation and accountability mechanisms, so countries could better hold each other accountable for achieving and sustaining adequate preparedness and response capacities (See Recommendation 4).

“The world needs to come together and make this commitment to be prepared and to hold itself and each other accountable for succeeding or failing together.”

Participants emphasized adherence to a collaborative framework centered on shared resources, information, and capacities, as well as mutual aid in response to shared threats. Participants noted that countries could achieve this by building upon existing multi-lateral structures, such as the WHO’s regional networks.

“SHARING OF RESOURCES AND BUILDING UP OF CORE PUBLIC HEALTH CAPACITIES IS NEEDED AROUND THE WORLD.”



Countries demonstrating commitment to public health security on the national level was discussed widely among participants. Recommendations were centered around addressing inefficiencies in resources, political infrastructure, and national pandemic preparedness and response strategies. Participants suggested that countries must demonstrate commitment through a range of tangible actions, including passing legislation, reforming political systems, allocating resources, training personnel, and strengthening preparedness and response strategies.

"WE NEED ONE PERSON WHO'S IN CHARGE OF GLOBAL HEALTH AND GLOBAL HEALTH SECURITY TO ACTUALLY COORDINATE THE DIFFERENT MINISTRIES THAT WE HAVE IN OUR COUNTRY."

DEMONSTRATING COMMITMENT

Participants noted that such actions would demonstrate a country's national commitment and political will toward preparing for and responding to infectious disease outbreaks, PHEICs, and pandemics. Participants also discussed changes in **policies and political structures** that could be undertaken by countries. One example was enacting legislation that would accurately reflect the IHR and other international standards. Policies might **also include circumventing of limiting structures and jurisdictional issues** during health emergencies, such as passing laws *"that give a defined set of authorities the ability to bypass structural limits to rapid action that needs to happen"* or that elevate the decision-making capacity and public influence of public health authorities. Several participants suggested instituting policies that promote early detection of outbreaks by incentivizing transparency and timely reporting through financial protection for industries (e.g., the animal husbandry sector) that may face financial and social consequences from early disclosure of an outbreak.



Participants thus emphasized reforming national preparedness and response systems by increasing collaboration across government agencies or ministries. Participants suggested that this might manifest in the creation of a broad national government inter-agency organization focused on global health security. Others suggested involving the private sector and influential NGOs. Several participants highlighted that sustaining long-term national policy change will require improved political leadership that better prioritizes public health and global health security. Participants gave examples of the type of political leaders and bodies that may be involved (*See Recommendation 8*).

“In many countries, they’re starting to build public health emergency operation centers that are health-specific. But there are also national disaster-management agencies that have their own emergency centers, and so these agencies need to have good coordination on a regular basis.”

Participants suggested that countries may also demonstrate commitment by reallocating resources to better support preparedness and response strategies. However, as one participant pointed out, it is not only a matter of resource allocation, but also of utilizing available resources to achieve core public health capacities: *“Demand [that] the governments set aside and spend, not just allocate, but spend X percent of GDP on pandemic preparedness and response.”*

Participants pointed to a diverse range of obstacles countries may face in effectively fulfilling their obligations under health security regulations, such as the IHR. These included domestic politics, limited resources, and poor systems organization, among other considerations. For example, several participants discussed the lack of country-level legislation and/or policy implementation to achieve and sustain adequate compliance with health regulations. Participants also highlighted that competing domestic priorities may outweigh health priorities.

“... the conflicting priorities, health priorities and other priorities that countries are faced with, both with respect to resource allocation, but also political.”



“There are far more pressing issues, ... everything you spend on [pandemic] preparedness will not help you politically, unless there is a pandemic or an epidemic in your country. And therefore, it will seem to be wasted political effort.”

“Governments think that by, for instance, investing in roads and schools they will gain more political advantage, rather than investing maybe in a hospital in a village somewhere, or even in a regional or national capital.”

“Countries did not adhere [to the IHR] because national priorities intervened ...”



OBSTACLES FOR INDIVIDUAL COUNTRIES

"IF ANYTHING WAS GOING TO PLACE INTO STARK RELIEF HOW THE LACK OF POLITICAL WILL AND THE LACK OF RESOURCES FOR PANDEMIC RESPONSE CAN ADVERSELY AFFECT THINGS, IT'S THE COVID-19 EXPERIENCE."

UNDERINVESTMENT

Several participants described underinvestment in national public health and medical systems as a leading cause for poor pandemic preparedness and response. One interviewee noted that this *"is not just in resource-constrained countries but also in rich countries, as we have seen with the current pandemic."* Resource scarcity, however, was frequently discussed by participants as a leading obstacle for countries to achieve and sustain the systems needed to effectively prevent, prepare for, and respond to a major infectious disease outbreak. Regardless of their wealth, it was suggested that countries may direct resources away from public health systems, particularly when no immediate health threats are apparent.

"We're actually now, with COVID-19, seeing the consequences of insufficient levels of investment, among all countries of the world, even the wealthiest countries."

"There's this pendulum of putting in credible amounts of effort and worry into something when the threat is there, and then having it wane when the threat appears to have gone away."

“On the national level, the main problem is the lack of either willingness or capacity to maintain investments in surveillance and preparedness, especially during inter-epidemic periods.”

“Everyone mobilizes their extra resources during the emergency but as soon as the emergency is over, countries go back to under-investing in those elements of preparedness. It is a challenge for countries to sustain the investments after the emergency, to be ready for the next one.”

POOR SYSTEMS ORGANIZATION

Participants often discussed preparedness and response to PHEICs in the context of resource scarcity, weak or fragile health systems, and/or fragmented systems where interconnectedness is needed (i.e., public health systems and health delivery systems; national and subnational systems). For example, participants noted that in many federated systems, public health is governed and coordinated at provincial and local levels, making national coordination challenging. Others emphasized that within countries, lack of coordination between government entities, such as a health ministry and a disaster management agency, might impede effective response even where resources are sufficient (See Recommendation 1).

“[Countries must] integrate subnational [systems] into the planning and decision-making process.”

“I THINK EVEN IN THE BEST CASE SCENARIOS, MANY OF THE PLACES THAT HAVE WEAK [HEALTH] SYSTEMS DON’T NECESSARILY HAVE THE MEANS TO FIX THOSE SYSTEMS.”

DOMESTIC POLITICS

Participants also chronicled how countries are unwilling to empower a global or multilateral entity to make decisions or take executive action

"THERE IS A RELUCTANCE TO BELIEVE THAT THERE IS A NEED FOR GLOBAL AUTHORITY."

on their behalf. Interviewees suggested that such unwillingness may stem from the belief that participating in global institutions or multilateral arrangements and providing aid to other countries will come at great national cost. This also includes the role that national politics play, either through political interference or a lack of political will, particularly in the current context of nationalism, anti-globalism, and political polarization. One example discussed by numerous participants was that countries

do not readily allow the WHO to manage and evaluate their public health systems' preparedness and response capacities, or to assess the conditions of emergencies of international concern.

"It's a dangerous situation when a country keeps the WHO out ..."

"That leaves you then ... to depend on each country to define the best way to respond, and of course some are more conscious than others, but if you don't have pressure from above, you tend to relax a bit on your measures and you tend to prepare for what seems more obvious in your context and not necessarily for a pandemic that will hit every [country]."

"Citizens expect that the first thing that [their leaders] should be concerned for ... is their own [citizens'] well-being and safety."

"When you look at those types of decisions made about what can become an existential threat to humanity, it speaks volumes about our inability to prioritize, at times due to a lack of political will to follow through on something of such great importance ..."

PART III: DISCUSSION TOGETHER WE CAN PREVENT THE NEXT PANDEMIC

1. OVERVIEW OF FINDINGS
2. DISCUSSION OF FINDINGS



The global health, social, and financial impacts of the COVID-19 pandemic have revealed the dangers associated with inadequate prevention, preparedness, and response to infectious disease threats. This pandemic has shown us that a single outbreak can quickly spread to every country, even the most remote islands (Gunia, 2020). Exacerbating the threat, there are an estimated 500,000 animal viruses that can spillover to humans, reinforcing the need to be effectively prepared to prevent the next pandemic (Grange et al., 2021). These factors highlight our global vulnerability to outbreaks that have the potential to become pandemics. The resulting precariousness of human security presents the major challenge and opportunity to encourage 7.8 billion people to work together to prevent, prepare for, and respond to outbreaks and pandemics. In fact, countries must share the responsibility of creating a global pandemic prevention architecture with the ability to stop outbreaks from becoming pandemics, to strengthen their pandemic prevention systems, and to implement scientific recommendations. Concurrently, they must also re-instill citizens' trust in national and global public health systems.

The Study

Beginning in December 2019, the *Global Public Health Convention for the 21st Century* initiative took place through a series of virtual interviews and group meetings amidst a rapidly expanding global outbreak. The urgency to take action was beyond question. The study brought together multidisciplinary experts of diverse backgrounds and international perspectives to establish the necessary characteristics for global collective action that could effectively ensure greater international cooperation in infectious disease prevention, preparedness, and response. Data were transcribed and then analyzed using qualitative content analysis, which involved analysis of interview transcripts to identify initial themes followed by a review of these themes to establish more refined categories and subcategories. A report with the findings was circulated to the experts, and their input was integrated into a next draft that was discussed at a virtual meeting of all the experts. Four iterative cycles of reports and feedback were conducted to achieve the final study, published in the *Lancet Public Health* (Duff et al., 2021). This report is a longer presentation of the rationale, methods, findings, and discussion of the Duff et al. (2021) study.

1. OVERVIEW OF FINDINGS

Recommendations

Participants identified several opportunities to strengthen the governance of international pandemic prevention, preparedness, and response. It was noted that the UN-designated global body responsible for health, the WHO, does not have any authority other than advising and providing technical assistance. A preponderance of participants therefore suggested that definitive changes to the current global public health governance system should be aimed at strengthening the World Health Organization and the International Health Regulations (2005); however, most agreed that this alone will be insufficient to address *all* of the current gaps in pandemic prevention, preparedness, and response. While the IHR provide a foundation for some features of a desirable global health system, including public health capacity building, evaluation, alert processes, and cooperative activities, the instrument currently does not address critical provisions required for pandemic prevention, preparedness, and response (Baker & Fidler, 2006; Bartolini, 2021). In fact, the word *pandemic* appears only once in the entire document, in Appendix 2 under “*Declarations and Statements*” (World Health Assembly, 2006, p. 63). Moreover, the IHR do not address pandemic prevention, nor do they adequately address response. Furthermore, their mechanisms are far too slow for infectious agents that spread exponentially.

The experts agreed that an improved global public health architecture is needed that builds on the strengths of the current system, addresses and remediates its weaknesses, and includes provisions based on the fundamental principles of accountability, cooperation, and transparency. Specifically, experts believed that WHO should continue to lead as the global technical and scientific body for health, but that the global public health architecture should be bolstered with new structures designed for inspection and verification, enforcement via compliance-enhancing mechanisms, and funding of pandemic prevention, preparedness, and response efforts globally. The resulting recommendations centered around the authorities needed by a global governing body(ies), the characteristics and capabilities of such organizations, and the key components for an effective system including enforcement mechanisms, freedom from undue political interference, sustainable funding, and stakeholder responsibilities.

Recommendations for a new global public health convention included principles of best practices, suggestions for improvements to the current system, and goals for a new global compact. In some respects, the recommendations affirmed current practices, with suggestions for improvements. In other instances, they presented novel approaches or new components to existing practices. The experts believed that a global body is needed that has the authority and resources to coordinate prevention of spread, preparedness, and response. Moreover, primary prevention of infectious outbreaks must be part of the scope of responsibility of the global body(ies) responsible for pandemics, along with the authority and resources to coordinate all types of prevention.

While actualizing some of these recommendations may prove challenging, they would significantly improve pandemic prevention, preparedness, and response, as well as better equip the world to prevent and mitigate the effects of infectious disease pandemics. Steps to achieving these recommendations include assembling an invested alliance, clearly communicating the benefits of an effective public health framework to garner support, specifying the operational structures needed to actualize these principles, and overcoming barriers such as the lack of political will, scarcity of resources, and individual national interests. The experts proposed ten recommendations as a framework for global governance to allow for optimal decision-making around the many elements of pandemic prevention, preparedness, and response.



The COVID-19 crisis has taught us that the current global public health architecture is significantly unequipped to handle pandemics. Within the gaps of our existing systems, various barriers to effective pandemic preparedness and response have emerged. For example, it has become apparent that no global body—including the WHO—has the authority that is needed to coordinate countries in pandemic prevention and response. Moreover, no entity has the *authority* to apply compliance-enhancing mechanisms, such as sanctions. For example, the International Health Regulations (2005) do not contain provisions authorizing the WHO to take remedial action on States Parties. The lack of an adequate system to ensure coordination, collaboration, and compliance with global public health regulations bolsters the need to create a new convention for global public health security that effectively addresses these shortcomings. Moreover, countries' refusal to share authority, potentially motivated by national-self interest, may also hinder global coordination and cooperation. It is for this reason that any new legally binding instrument must be signed at the level of heads of state/government, because only heads of state/government can agree to share sovereignty with a global body to coordinate pandemic-related activities and agree to compliance-enhancing mechanisms.

2. DISCUSSION OF FINDINGS

Despite the significant human and economic consequences of the COVID-19 pandemic, individual countries may still weigh the costs and benefits to cooperating. Even when confronted with a deadly pandemic that has resulted in significant human, social, and economic devastation, many countries may still not accept that collective action is needed for effective pandemic prevention, preparedness, and response. National interests backed by strong political forces may purposely or inadvertently weaken a global health governing body. Political interference—often tied to state centrality—therefore presents a formidable obstacle for a governing body's ability to effectively execute an international pandemic prevention, preparedness, and response compact. Another central issue surrounding authority to coordinate prevention, preparedness, and response activities on a global scale is that public health activities are typically conducted at subnational levels. In combination, these issues further highlight the need to bring heads of state/government to the table.

Accountability & Compliance for Prevention, Preparedness, & Rapid Response

When countries fail to comply with public health recommendations, it places the whole world at risk for the rapid escalation of an outbreak into a pandemic. The movement to construct a better global health architecture for pandemics need not fully reinvent the wheel. While we must build and improve upon existing systems and instruments, such as the IHR, WHO, UN, existing financial institutions, national health systems, NGO networks, and related systems, we must also create new bodies with the authority to provide coordination and oversight to the entire pandemic prevention architecture, such as the Independent Panel for Pandemic Preparedness and Response (IPPPR)-recommended *Global Health Threats Council*.



Surveillance, Monitoring, Evaluation, & Verification

Currently, there is no legally binding instrument with provisions for objective external review or verification that would safeguard public health from infectious disease outbreaks or uncontained infectious disease epidemics that can grow into pandemics. Selective and voluntary compliance with WHO

guidance underscores the need to address this gap in global public health governance (Hoffman, 2010). One possible mechanism for increasing compliance would be the monitoring and objective external evaluation of progress toward pandemic prevention, preparedness, and response benchmarks.

While new structures may need to be established, existing systems could still provide a blueprint for improving the enforcement of global health security. *The Treaty on Non-Proliferation of Nuclear Weapons* and its subsequent agreements, negotiated by the International Atomic Energy Agency (IAEA), have been identified as viable governance models for increased transparency and accountability (IAEA, 1994). The IAEA functions as the global “*nuclear inspectorate*” with the authority to “*verify*” that States are “*living up to international commitments not to use nuclear programs for nuclear-weapons purposes*” (IAEA, 2020, p. 1). While the IAEA’s safeguard system promotes the safe use of nuclear power

and prevents its use for military purposes, it also *authorizes* the Agency “*not only to verify the non-diversion of declared nuclear material but also to provide assurances as to the absence of undeclared nuclear material and activities in a State*” (IAEA, 2020, p. 1-2).

With the authority to enter countries, an independent IAEA-like inspectorate for pandemic prevention and preparedness readiness would verify the accuracy of country reports on and country readiness in the face of outbreaks, public health emergencies of international concern, and pandemics.

Incentives & Disincentives

Currently, there does not exist a legally binding instrument on outbreaks, public health emergencies of international concern, or pandemics that includes incentives or disincentives to encourage or promote compliance. Experience from other legal instruments demonstrate the difficulties of treaty execution and implementation without accountability and enforcement mechanisms (Hoffman & Røttingen, 2014). For example, the *WHO Framework Convention on Tobacco Control* (FCTC), an international treaty ratified by 181 countries to reduce harmful tobacco consumption, has resulted in no net decrease in global tobacco consumption since its adoption in 2003 (Hoffman et al., 2019). In fact, while high-income countries have shown decreases in consumption, low- and middle-income countries have increased consumption above what would have been anticipated without adoption of the FCTC (Hiilamo & Glantz, 2018; Hoffman et al., 2019). This has been due to slow implementation of the FCTC in individual countries and the influence of powerful industry forces. Furthermore, with increased regulations in Western societies, Big Tobacco has increased its efforts to grow its consumer-base in Asia and Africa (American Cancer Society, 2018).

An international agreement, convention, or treaty on pandemic prevention, preparedness, and response must therefore include provisions for compliance and enforcement. The development of a global health architecture that will be effective in preventing future pandemics will thus require the willingness of countries to subject themselves to verification, inspection, and incentives and disincentives.

Autonomy & Independence

One of the biggest threats to the autonomy and independence of global bodies such as the WHO is its lack of sustainable funding. Less than 20% of the WHO budget comes from assessed contributions (WHO 2020d). The rest is provided on a voluntary basis by private or country donors. Unfortunately, voluntary contributions have the potential, and occasionally the likelihood, of influencing the agenda of the WHO. Moreover, the WHO is deprived of the funding it needs to support those activities that it believes are essential for pandemic management. The recent draft report of the Working Group on Sustainable Financing recommended that assessed contributions to the WHO be increased to 50% (WHO 2021c).

Without an independent financing framework, the WHO and other international bodies that may comprise the global pandemic management architecture will lack the autonomy they need to function. Prevention of and preparedness for infectious disease threats have been subject to chronic underfunding. Historically, the lack of political will has presented a significant barrier to adequate financial investment in global public health. Without accounting for losses to economies, governments, businesses and people, the world's countries have spent around US\$16.9 trillion in country fiscal measures in response to COVID-19 between January of 2020 and September of 2021 (IMF, 2021). The IMF projected that the global cost of COVID-19 could total \$28 trillion in lost output by 2025 (Congressional Research Service, 2021). Estimates of the cost of fully funding global and within/across countries pandemic prevention, preparedness, and response on an annual basis is about one five-hundredth of the cost of the global COVID-19 response (Schwab, 2020).

Existing financing and governance structures—such as the Global Fund—could serve as models for managing funds distributed to low- and middle-income countries for pandemic prevention and response. Through its partnership with governments, the private sector, civil society, technical agencies, and individuals, the Global Fund has invested US\$4 billion a year in local programs dedicated to tackling AIDS, Tuberculosis, and Malaria (The Global Fund, 2019). In 2021, it received \$3.5 billion from the United States to support the COVID-19 response among LMICs (The Global Fund, 2021).

Multisectorality & Representation

Reinvigorated approaches to pandemic prevention, preparedness, and response require an invested, multisectoral constituency to build a social movement for change (Gostin & Hodge, 2016; United Nations Development Programme & International Federation of Red Cross and Red Crescent Societies, 2017). This involves assembling an alliance of governments, multilateral bodies, NGOs, civil society organizations, and the private sector, among others.



As seen in the trajectory of the 2016 Paris Climate Agreement, the development of national and private sector investment in climate action and sustainability was paralleled by compelling civil society appeals that communicated the gravity of a decaying planet at the hands of humans (United Nations Climate Change, 2018). Similarly, the movement to abolish nuclear weapons was bolstered by alliance-building (International Campaign to Abolish Nuclear Weapons, 2021). In contrast to these movements, global health has not historically been amplified by the public as a priority. Fortunately, this began to change with the onset of COVID-19. Since the beginning of the pandemic, various civil society groups have advocated for change, such as the Pandemic Action Network in regard to vaccine equity.

While issues of equity are critical to ending the COVID-19 pandemic, progress must also be made with an eye to the future. Forthcoming negotiations of an international agreement, accord, or convention on pandemic prevention, preparedness, and response will only be strengthened by active participation of civil society. It is therefore critical that world leaders welcome and actively engage a diversity of non-governmental stakeholders in the discussions of a legally binding instrument. Successful implementation of the provisions of such an instrument will need civil society's buy-in and participation throughout the process.



Commitment

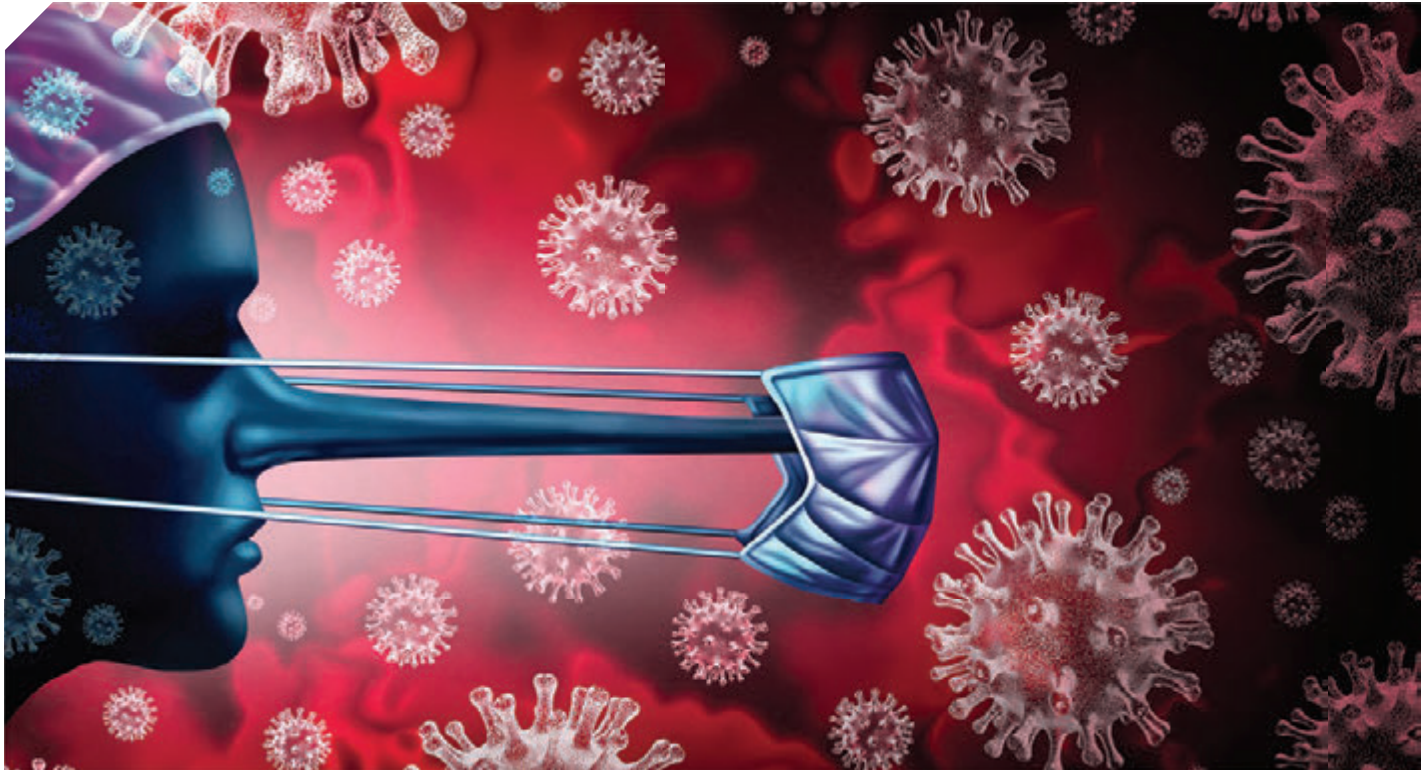
This movement requires active dialogue with political leaders who make critical decisions about the future of humanity. Change requires partnership with powerful political and financial entities and known champions of health. Additionally, it is necessary to rally other prominent voices of influence, including religious and local leaders, celebrities, and the media. Numerous global groups comprised of high level stakeholders have recently promoted the strengthening of global health security in the form of a new legally-binding pandemic prevention treaty. These include but are not limited to the Independent Panel for Pandemic Preparedness and Response (IPPPR), the International Health Regulation (IHR) Review Committee, the Working Group on Strengthening WHO Preparedness for and Response to Health Emergencies (WGPR), the Pan-European Commission on Health and Sustainable Development, the G20 High-Level Independent Panel on Financing the Global Commons for Pandemic Preparedness and Response, and our own Panel for a Global Public Health Convention. Each brings a unique voice in calling for reform of the global public health system, but all are united in the urgency to promote bold, science-based action to prevent the next pandemic.

Overcoming Political Interference, Anti-Science, and Misinformation

International and domestic politics as well as the global political climate have also presented profound challenges to health security. The current global political context of actors, including sovereign nations and private interests,

conflicts between countries, and the growing polarization between political and social ideologies have made achieving a global consensus difficult. Additional challenges in the global political context include anti-science, anti-democratic, and isolationist thinking, which have gained concerning traction globally since the onset of COVID-19.





The resulting politicization of science and the spread of misinformation has impacted the willingness and ability to effectively respond to the current pandemic and present a grave threat to preventing and responding to a future public health emergency of international concern or pandemic. Engaging the major global powers to agree has also proved challenging. For example, due to disputes between the United States and China, the UN Security Council experienced major delays in discussing and addressing COVID-19 (Pavone, 2021). Despite ideological and cultural differences, an agreement between most nations is necessary, albeit ambitious, for establishing and maintaining an effective global health architecture. Countries must place their differences aside to confront the current and prevent future public health emergencies.

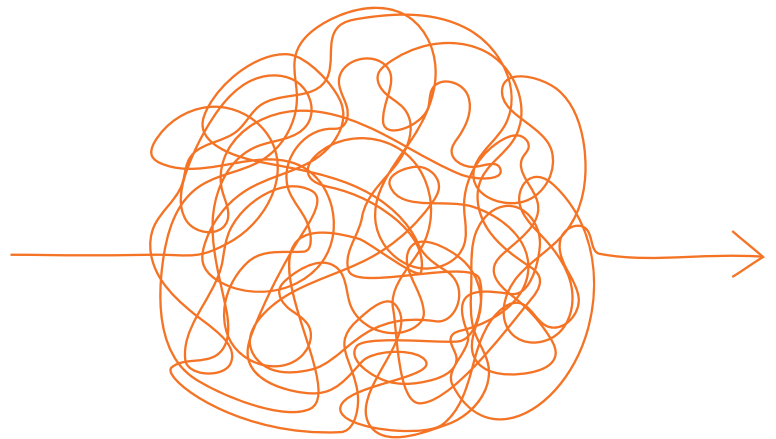
PART IV: CONCLUSION THE ROAD AHEAD



In modern history, major challenges have often led to innovation and change. For example, World War II led to increased cooperation in the form of multilateralism through the United Nations system. The HIV pandemic coalesced activists from a multitude of sectors to create new institutions, garner funding, and inspire international collaboration for a single cause. Now, in a time of worldwide vulnerability, global solidarity and unorthodox thinking are needed to surpass COVID-19 and move the world toward safeguarding against the threat of future outbreaks, public health emergencies of international concern, and pandemics.

There is a clear need to overhaul the current global public health system to better enforce and build on science-based standards of practice for pandemic management. The COVID-19 pandemic clearly exposes how the existing global health infrastructure fails the world when it is most needed, resulting in major consequences of loss of life and devastations to economies and societies. Fortunately, with the agreements reached at the World Health Assembly Special Session on December 1, 2021, we have seen a renewed political will to cooperate.

The work has only just begun. The COVID-19 crisis continues to plunder every fiber of our global society, health systems, and economy. It also brings the many aspects of infectious disease threats that were previously seen only by public health experts to the attention of actors from every sector of society. Through this difficult process of reevaluating the global public health system and associated structures, we are now equipped with the experience and perspective of having lived through a global public health catastrophe as one global community.



The current pandemic has sparked the spirit of innovation and transformation in areas such as data sharing, vaccine discovery, manufacturing of essential goods and mutual aid. However, there has not been sufficient progress made on issues such as data transparency and vaccine allocation (Kavanagh, 2021).



Wide disparities in vaccine distribution remain a concern: only a small fraction of the world's low- and lower middle-income populations have been vaccinated, compared to a growing majority of the world's high-income populations (Rouw et al., 2021). Two years into the COVID-19



pandemic, production is insufficient to vaccinate the world. Vaccine production must be ramped up dramatically, which can most expediently be achieved by tapping into developing countries' capacity to manufacture them. This, however, will require either licensing or yielding of intellectual property by pharmaceuticals as has occurred with

Astrazeneca. It is with an innovative spirit that we must consider how the world should manage outbreak and pandemic prevention, preparedness, and response efforts. It is with a humanitarian spirit that we must allow all countries with the ability to manufacture the common goods the world requires to save millions of lives.

Our TEN RECOMMENDATIONS from subject matter experts are meant to inform discussions of a new global agreement, convention, or treaty. These recommendations represent principles for better governance practices, suggestions for improvements to the current system, and aspirational goals for multilateralism. Some of these recommendations affirm contemporary practices with suggestions for improvements, while others present novel ideas that depart from the status quo.

TOGETHER WE CAN END THIS PANDEMIC AND PREVENT THE NEXT ONE.

Although we live in a reality of diverse and often diverging interests, there is a compelling demand for an aligned approach. Our current systems have been unable to meet our mutual needs in the face of pandemic threats. Creative



reforms should address the weaknesses that have been revealed and seek to reimagine the global health system. Engagement with a multitude of actors is needed. Creating new financing and governance options is prudent. It is time to demand a system that can proactively prevent the human and economic harms of infectious disease pandemics.

To be effective, a new international agreement, convention, or treaty on pandemic prevention, preparedness, and response must contain legally binding provisions; a clear mandate and authority on the coordination of pandemic management; mechanisms for verification and compliance; and sustained and guaranteed funding for global pandemic prevention agencies and for low- and middle-income countries. The world has the scientific knowledge to prevent such an event from happening again, but urgent action is needed now. Together we can end this pandemic and prevent the next one.

- Adrian, T., & Natalucci, F. (2020).** COVID-19 worsens pre-existing financial vulnerabilities. *IMFBlog: Insights and Analysis on Economics and Finance, International Monetary Fund*. <https://blogs.imf.org/2020/05/22/covid-19-worsens-pre-existing-financial-vulnerabilities/>
- Alsan, M., Bhadelia, A., Foo, P., Haberland, C., & Knaul, F. (2016).** The economics of women's health in low- and middle-income countries: A life cycle approach. In R. Scheffler (Ed.), *World scientific handbook of global health economics and public policy: The economics of health and health systems* (Vol. 2, pp. 397-432). World Scientific.
- American Cancer Society. (2018, March 8).** Big tobacco is targeting the world's most vulnerable to increase profits, report finds: Africa and the Middle East are at a tipping point for avoiding epidemic numbers of preventable morbidity and mortality. *ScienceDaily*. <https://www.sciencedaily.com/releases/2018/03/180308085539.htm>
- Anderson, R., Heesterbeek, H., Klinkenberg, D., & Hollingsworth, T. D. (2020).** How will country-based mitigation measures influence the course of the COVID-19 epidemic? *The Lancet*, 395(10228), 931-934. [https://doi.org/10.1016/S0140-6736\(20\)30567-5](https://doi.org/10.1016/S0140-6736(20)30567-5)
- Asian Development Bank. (2020a).** An updated assessment of the economic impact of COVID-19 (ADB Briefs no. 133). <http://dx.doi.org/10.22617/BRF200144-2>
- Asian Development Bank. (2020b).** COVID-19 economic impact could reach \$8.8 trillion globally: New ADB report [News release]. <https://www.adb.org/news/covid-19-economic-impact-could-reach-8-8-trillion-globally-new-adb-report>
- Atkeson, A. (2020).** *What will be the economic impact of COVID-19 in the US? Rough estimates of disease scenarios* [NBER Working Paper Series no. 26867]. National Bureau of Economic Research. <http://www.nber.org/papers/w26867>
- Atun, R., de Andrade, L. O. M., Almeida, G., Cotlear, D., Dmytraczenko, T., Frensz, P., Garcia, P., Gómez-Dantés, O., Knaul, F. M., Muntaner, C., Braga de Paula, J., Rígoli, F., & Wagstaff, A. (2015).** Health-system reform and universal health coverage in Latin America. *The Lancet*, 385(9974), 1230-1247. [https://doi.org/10.1016/S0140-6736\(14\)61646-9](https://doi.org/10.1016/S0140-6736(14)61646-9)
- Baker, M. G., & Fidler, D. P. (2006).** Global public health surveillance under new International Health Regulations. *Emerging Infectious Diseases*, 12(7), 1058-1065. <https://doi.org/10.3201/eid1207.051497>
- Bartolini, G. (2021).** The failure of 'core capacities' under the WHO International Health Regulations. *The International and Comparative Law Quarterly*, 70(1), 233-250. <https://doi.org/10.1017/S0020589320000470>
- Battistini, N., & Stoevsky, G. (2020).** Alternative scenarios for the impact of the COVID-19 pandemic on economic activity in the euro area. *ECB Economic Bulletin*, 2020(3). https://www.ecb.europa.eu/pub/economic-bulletin/focus/2020/html/ecb.ebbox202003_01~767f86ae95.en.html
- Benatar, S.R., Gill, S., & Bakker, I.C. (2011).** Global health and the global economic crisis. *American Journal of Public Health* 101(4), 646-653. <https://doi.org/10.2105/AJPH.2009.188458>

- Bloom, D., & Cadarette, D. (2019).** Infectious disease threats in the twenty-first century: Strengthening the global response. *Frontiers in Immunology*, 10(549). <https://doi.org/10.3389/fimmu.2019.00549>
- Bloom, D., Cadarette, D., & Sevilla, J. P. (2018).** Epidemics and economics: New and resurgent infectious diseases can have far-reaching economic repercussions. *Finance & Development*, 55(2). <https://www.imf.org/external/pubs/ft/fandd/2018/06/economic-risks-and-impacts-of-epidemics/bloom.pdf>
- Bluedorn, J., Gopinath, G., & Sandri, D. (2020).** An early view of the economic impact of the pandemic in 5 charts. *IMFBlog: Insights and Analysis on Economics and Finance, International Monetary Fund*. <https://blogs.imf.org/2020/04/06/an-early-view-of-the-economic-impact-of-the-pandemic-in-5-charts/>
- Boissay, F., & Rungcharoenkitkul, P. (2020).** Macroeconomic effects of Covid-19: An early review. *Bank for International Settlements Bulletin*, 7. <https://www.bis.org/publ/bisbull07.pdf>
- Bowles, S., & Gintis, H. (2002).** The Inheritance of inequality. *Journal of Economic Perspectives*, 16(3), 3-30. <https://www.aeaweb.org/articles?id=10.1257/089533002760278686>
- Braveman, P. (2006).** Health disparities and health equity: Concepts and measurement. *Annual Review of Public Health*, (2006)27, 167-94. <https://www.annualreviews.org/doi/abs/10.1146/annurev.publhealth.27.021405.102103>
- Braveman, P., & Barclay, C. (2009).** Health disparities beginning in childhood: A life-course perspective. *Pediatrics*, 124 Suppl 3, S163-S175. <https://doi.org/10.1542/peds.2009-1100D>
- Braw, E. (2020, 4 March).** Blindsided on the supply side. *Foreign Policy*. <https://foreignpolicy.com/2020/03/04/blindsided-on-the-supply-side/>
- Burgess, S., & Sievertsen, H. H. (2020, 1 April).** Schools, skills, and learning: The impact of COVID-19 on education. *The Centre for Economic Policy Research*. <https://voxeu.org/article/impact-covid-19-education>
- Carlton, J. (2020).** Mandatory mask laws aren't enforced as coronavirus continues to spread. *The Wall Street Journal*. <https://www.wsj.com/articles/mandatory-mask-laws-arent-enforced-as-coronavirus-continues-to-spread-11594978200>
- Cassell, C., Bamberg, Z., Roy, K., Meltzer, M., Ahmed, Z., Payne, R., & Bunnell, R. (2017).** Relevance of global health security to the US export economy. *Health Security*, 15(6). <https://doi.org/10.1089/hs.2017.0051>
- Casselmann, B., & Friedman, G. (2020).** Without a \$600 weekly benefit, jobless Americans face bleak choices. *The New York Times*. <https://www.nytimes.com/2020/08/10/business/without-a-600-weekly-benefit-jobless-americans-face-bleak-choices.html>
- Centers for Disease Control and Prevention. (2013, 22 November).** CDC health disparities and inequalities report — United States, 2013. *Morbidity and Mortality Weekly Report*, 62(3). <https://www.cdc.gov/mmwr/pdf/other/su6203.pdf>
- Centers for Disease Control and Prevention. (2018).** *Well-Being Concepts*. <https://www.cdc.gov/hrqol/wellbeing.htm>
- Centers for Disease Control and Prevention. (2019).** 1918 Pandemic (H1N1 virus). <https://www.cdc.gov/flu/pandemic-resources/1918-pandemic-h1n1.html>

- Centers for Disease Control and Prevention. (2021).** *Coping with stress*. <https://www.cdc.gov/mentalhealth/stress-coping/cope-with-stress/index.html>
- Centre for Risk Studies. (2020).** *The GDP@Risk over five years from COVID-19 could range from \$3.3 trillion to \$82 trillion*. Cambridge University Judge Business School. <https://www.jbs.cam.ac.uk/insight/2020/economic-impact/>
- Chan, S. P. (2020).** Global economy will suffer for years to come, says OECD. *BBC News*. <https://www.bbc.com/news/business-52000219>
- Chatham House. (2018).** *The lasting effects of the financial crisis have yet to be felt*. <https://www.chathamhouse.org/expert/comment/lasting-effects-financial-crisis-have-yet-be-felt>
- Cheney, C. (2020).** 'Big concerns' over Gates Foundation's potential to become largest WHO donor. *Devex*. <https://www.devex.com/news/big-concerns-over-gates-foundation-s-potential-to-become-largest-who-donor-97377>
- Chetty, R., Friedman, J., Hendren, N., Stepner, M., & the Opportunity Insights Team. (2020).** *Real-time economics: A new platform to track the impacts of COVID-19 on people, businesses, and communities using private sector data*. Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School. https://opportunityinsights.org/wp-content/uploads/2020/05/tracker_paper.pdf
- Clift, C., & Rottingen, J. A. (2018).** New approaches to WHO financing: The key to better health. *BMJ*, 361, k2218. <https://doi.org/10.1136/bmj.k2218>
- Commission on Social Determinants of Health. (2008).** *Closing the gap in a generation: Health equity through action on the social determinants of health*. World Health Organization. <https://www.who.int/publications/i/item/WHO-IER-CSDH-08.1>
- Committee for the Coordination of Statistical Activities. (2020).** How COVID-19 is changing the world: A statistical perspective. <https://unstats.un.org/unsd/ccsa/documents/covid19-report-ccsa.pdf>
- Conger, K. (2021, 24 July).** Twitter suspends Marjorie Taylor Green for posting coronavirus misinformation. *The New York Times*. <https://www.nytimes.com/2021/07/19/technology/marjorie-taylor-green-twitter.html>
- Congressional Research Service. (2021).** Global economic effects of COVID-19. *Congressional Research Service*. <https://sgp.fas.org/crs/row/R46270.pdf>
- Cutler, D. (2020).** How will COVID-19 affect the health care economy? *JAMA Health Forum*, 1(4), e200419. <https://jamanetwork.com/channels/health-forum/fullarticle/2764547>
- Daniszewski, J. (2020).** In struggle against pandemic, populist leaders fare poorly. *ABC News*. <https://abcnews.go.com/Politics/wireStory/struggle-pandemic-populist-leaders-fare-poorly-71936667>
- Darnton, J. (1996, 28 March).** Europe orders ban on exports of British beef. *The New York Times*. <https://www.nytimes.com/1996/03/28/world/europe-orders-ban-on-exports-of-british-beef.html>
- Daugirdas, K., & Burci, G. L. (2019).** Financing the World Health Organization. *International Organizations Law Review*, 2019(2), 299-338. <https://doi.org/10.1163/15723747-01602005>

- Davies, S. E., Kamradt-Scott, A., & Rushton, S. (2015). *Disease diplomacy: International norms and global health security*. Johns Hopkins University Press.
- de Andrade, L. O. M., Filho, A. P., Solar, O., Rígoli, F., de Salazar, L. M., Serrate, P. C.-F., Ribeiro, K. G., Koller, T. S., Cruz, F. N. B., & Atun, R. (2015). Social determinants of health, universal health coverage, and sustainable development: Case studies from Latin American countries. *The Lancet*, 385(9975), 1343–1351. [https://doi.org/10.1016/S0140-6736\(14\)61494-X](https://doi.org/10.1016/S0140-6736(14)61494-X)
- DeLeo, F., & Hinnebusch, B. (2005). A plague upon the phagocytes. *Nature Medicine*, 11, 927–928. <https://doi.org/10.1038/nm0905-927>
- Deloffre, M. Z. (2014, 25 October). *Human security in the age of Ebola: Towards people-centered global governance*. E-International Relations. <https://www.e-ir.info/2014/10/25/human-security-in-the-age-of-ebola-towards-people-centered-global-governance/>
- Dodgson, R., Lee, K., & Drager, N. (2002). *Global health governance: A conceptual review* (Discussion paper no. 1). World Health Organization. https://apps.who.int/iris/bitstream/handle/10665/68934/a85727_eng.pdf?sequence=1&isAllowed=y
- Duff, J. H., Liu, A., Saavedra, J., Batycki, J. N., Morancy, K., Stocking, B., Gostin, L. O., Galea, S., Bertozzi, S., Zuniga, J. M., Alberto-Banatin, C., Dansua, A. S., del Rio, C., Kulzhanov, M., Lee, K., Scaglia, G., Shahpar, C., Ullmann, A. J., Hoffman, S. J., . . . Szapocznik, J. (2021). A global public health convention for the 21st century. *The Lancet Public Health*, 6(6), e428–e433. [https://doi.org/10.1016/S2468-2667\(21\)00070-0](https://doi.org/10.1016/S2468-2667(21)00070-0)
- Education: A neglected social determinant of health. (2020). *The Lancet Public Health*, 5(7), e361. [https://doi.org/10.1016/S2468-2667\(20\)30144-4](https://doi.org/10.1016/S2468-2667(20)30144-4)
- Engels, D., & Zhou, X. (2020). Neglected tropical diseases: An effective global response to local poverty-related disease priorities. *Infectious Diseases of Poverty*, 9. <https://doi.org/10.1186/s40249-020-0630-9>
- European Central Bank. (2020). Update on economic and monetary developments. *ECB Economic Bulletin*, 2020(3). <https://www.ecb.europa.eu/pub/pdf/ecbu/eb202003.en.pdf>
- Eurostat. (2019). *Statistics explained: Quality of life indicators – Education*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Quality_of_life_indicators_-_education#Education_in_the_context_of_quality_of_life
- Eurostat. (2020a). *GDP down by 3.8% in the euro area and by 3.5% in the EU* [News release]. *Euro indicators*. <https://ec.europa.eu/eurostat/documents/2995521/10294708/2-30042020-BP-EN.pdf/526405c5-289c-30f5-068a-d907b7d663e6>
- Eurostat. (2020b). *Statistics explained: Unemployment statistics*. https://ec.europa.eu/eurostat/statistics-explained/index.php/Unemployment_statistics#Unemployment_in_the_EU_and_the_euro_area
- Eurostat. (2021c). *October 2020. Euro area unemployment at 8.4%. EU at 7.6%*. Eurostat. https://ec.europa.eu/eurostat/documents/portlet_file_entry/2995521/3-02122020-AP-EN.pdf/3b4ec2e2-f14c-2652-80bd-2f5e7c0605c2

- Eurostat. (2021a).** *Statistics explained: Unemployment statistics*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Unemployment_statistics#Unemployment_in_the_EU_and_the_euro_area
- Eurostat. (2021b).** *GDP down by 0.7% in the euro area and by 0.5% in the EU* [News release]. *Euro indicators*. https://ec.europa.eu/eurostat/documents/portlet_file_entry/2995521/2-02022021-AP-EN.pdf/0e84de9c-0462-6868-df3e-dbacaad9f49f
- Fan, V., Jamison, D., & Summers, L. (2016).** *The inclusive cost of pandemic influenza risk* [Working paper no. 22137]. National Bureau of Economic Research. <http://www.nber.org/papers/w22137>
- Feldbaum, H., Lee, K., & Michaud, J., (2010).** Global health and foreign policy. *Epidemiologic Reviews*, 32(1), 82-92. <https://academic.oup.com/epirev/article/32/1/82/497521>
- Fickling, D. (2006).** EU lifts ban on British beef exports. *The Guardian*. <https://www.theguardian.com/uk/2006/may/03/bse.eu>
- Fidler, D. P. (2020).** *The World Health Organization and pandemic politics: The good, the bad, and an ugly future for global health*. Think Global Health, Council on Foreign Relations. <https://www.thinkglobalhealth.org/article/world-health-organization-and-pandemic-politics>
- Flahault, A., Wernli, D., Zylberman, P., & Tanner, M. (2016).** From global health security to global health solidarity, security and sustainability. *Bulletin of the World Health Organization*, 94(12), 863. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5153927/>
- Frenk, J., & Gómez-Dantés, O. (2009).** Ideas and ideals: Ethical basis of health reform in Mexico. *The Lancet*, 373(9673), 1406-1408. [https://doi.org/10.1016/S0140-6736\(09\)60800-X](https://doi.org/10.1016/S0140-6736(09)60800-X)
- Friese, S. (2020).** *ATLAS.ti 8 user manual*. ATLAS.ti Software Development GmbH. http://downloads.atlasti.com/docs/manual/atlasti_v8_manual_en.pdf
- Galea, S. (2020).** Compassion in a time of COVID-19. *The Lancet*, 395(10241), 1897-1898. [https://doi.org/10.1016/S0140-6736\(20\)31202-2](https://doi.org/10.1016/S0140-6736(20)31202-2)
- The Global Fund to End AIDS, Tuberculosis, and Malaria. (2019).** *US\$14 billion to step up the fight against the epidemics*. <https://www.theglobalfund.org/en/specials/2019-10-09-global-fund-sixth-replenishment-conference/>
- The Global Fund to End AIDS, Tuberculosis, and Malaria. (2021).** *Global Fund thanks the United States for US\$3.5 billion emergency investment to fight COVID-19*. <https://www.theglobalfund.org/en/news/2021-03-11-global-fund-thanks-the-united-states-for-usd3-5-billion-emergency-investment-to-fight-covid-19/>
- Global Preparedness Monitoring Board. (2019).** *A world at risk: Annual report on global preparedness for health emergencies*. World Health Organization. https://www.gpmb.org/docs/librariesprovider17/default-document-library/annual-reports/gpmb-2019-annualreport-en.pdf?sfvrsn=bd1b8933_36
- Global Preparedness Monitoring Board. (2020).** *A world in disorder: Global Preparedness Monitoring Board annual report 2020*. World Health Organization. https://www.gpmb.org/docs/librariesprovider17/default-document-library/annual-reports/gpmb-2020-annualreport-en.pdf?sfvrsn=bd1b8933_36

- Goldstein, D., Popescu, A., & Hannah-Jones, N. (2020). As school moves online, many students stay logged out. *The New York Times*. <https://www.nytimes.com/2020/04/06/us/coronavirus-schools-attendance-absent.html>
- Gopalan, S. S., & Das, A. (2009). Household economic impact of an emerging disease in terms of catastrophic out-of-pocket health care expenditure and loss of productivity: Investigation of an outbreak of chikungunya in Orissa, India. *Journal of Vector Borne Diseases*, 46(1), 57. <https://pubmed.ncbi.nlm.nih.gov/19326709/>
- Gostin, L. O. (2015). World Health Organization reform: Lessons learned from the Ebola epidemic. *Hastings Center Report*, 45(2), 6–7. <https://doi.org/10.1002/hast.424>
- Gostin, L. O., & Hodge, J. G. (2016). Zika virus and global health security. *Lancet Infectious Diseases*, 16(10), 1099–1100. [https://doi.org/10.1016/S1473-3099\(16\)30332-2](https://doi.org/10.1016/S1473-3099(16)30332-2)
- Gostin, L. O., & Katz, R. (2016). The International Health Regulations: The governing framework for global health security. *Milbank Quarterly*, 94(2), 264–313. <https://doi.org/10.1111/1468-0009.12186>
- Gostin, L. O., Sridhar, D., & Hougendobler, D. (2015). The normative authority of the World Health Organization. *Public Health*, 129(7), 854–863. <https://doi.org/10.1016/j.puhe.2015.05.002>
- Gostin, L. O., & Taylor, A. L. (2008). Global health law: A definition and grand challenges. *Public Health Ethics*, 1(1):53–63. <https://doi.org/10.1093/phe/phn005>
- Gostin, L. O., Tomori, O., Wibulpolprasert, S., Jha, A. K., Frenk, J., Moon, S., Phumaphi, J., Piot, P., Stocking, B., Dzau, V. J., & Leung, G. M. (2016). Toward a common secure future: Four global commissions in the wake of Ebola. *PLoS Medicine*, 13(5): e1002042. <https://doi.org/10.1371/journal.pmed.1002042>
- Grange, Z. L., Goldstein, T., Johnson, C. K., Anthony, S., Gilardi, K., Daszak, P., Olival, K. J., O'Rourke, T., Murray, S., Olson, S. H., Togami, E., Vidal, G., Expert Panel, PREDICT Consortium, & Mazet, J. A. K. (2021). Ranking the risk of animal-to-human spillover for newly discovered viruses. *Proceedings of the National Academy of Sciences - PNAS*, 118(15), 1. <https://doi.org/10.1073/pnas.2002324118>
- Greenberg, A., & Keating, J. (2009). *Young adults: Trying to weather a recession. National survey results*. Greenberg Quinlan Rosner Research.
- Guerrieri, V., Lorenzoni, G., Straub, L., & Werning, I. (2020). *Macroeconomic implications of COVID-19: Can negative supply shocks cause demand shortages?* [Working paper no. 26918]. National Bureau of Economic Research. <https://www.nber.org/papers/w26918>
- Gunia, A. (2020). COVID-19 is reaching the last coronavirus-free nations on Earth. *Time*. <https://time.com/5910456/pacific-islands-covid-19-vanuatu/>
- Guterres, A. (2020). *The recovery from the COVID-19 crisis must lead to a different economy*. United Nations. <https://www.un.org/en/un-coronavirus-communications-team/launch-report-socio-economic-impacts-covid-19>
- Habibi, R., Burci, G. L., de Campos, T. C., Chirwa, D., Cinà, M., Dagron, S., Eccleston-Turner, M., Forman, L., Gostin, L. O., Meier, B. M., Negri, S., Ooms, G., Sekalala, S., Taylor, A., Yamin, A. E., & Hoffman, S. J. (2020). Do not violate the International Health Regulations during the COVID-19 outbreak. *The Lancet (British Edition)*, 395(10225), 664–666. [https://doi.org/10.1016/S0140-6736\(20\)30373-1](https://doi.org/10.1016/S0140-6736(20)30373-1)

- Hahn, R. A., & Truman, B. I. (2015). Education improves public health and promotes health equity. *International Journal of Health Services: Planning, Administration, Evaluation*, 45(4), 657-678. <https://doi.org/10.1177/0020731415585986>
- Haren, P., & Simchi-Levi, D. (2020). How coronavirus could impact the global supply chain by mid-March. *Harvard Business Review*. <https://hbr.org/2020/02/how-coronavirus-could-impact-the-global-supply-chain-by-mid-march>
- Hassan, A., Mustapha, G. U., Lawal, B. B., Na'uzo, A. M., Ismail, R., Oboma, E. W-E., Oyebanji, O., Agenyi, J., Thomas, C., Balogun, M. S., Nguku, P., & Ihekweazu, C. (2018). Time delays in the response to the *Neisseria meningitidis* serogroup C outbreak in Nigeria - 2017. *PloS One*, 13(6), e0199257-e0199257. <https://doi.org/10.1371/journal.pone.0199257>
- Hausmann, R. (2020). *The macro-economic implications of COVID-19 in our partner countries*. Centre for Development and Enterprise. <https://www.cde.org.za/ricardo-hausmann-covid-19-macro-economic-consequences-for-developing-countries/>
- Hawkins, L. (2020). New York City teachers worry about 'COVID slide'. *The Wall Street Journal*. <https://www.wsj.com/articles/new-york-city-teachers-worry-about-covid-slide-11590590485>
- Hiilamo, H., & Glantz, S. (2018). Limited implementation of the framework convention on tobacco control's tobacco tax provision: Global comparison. *BMJ Open*, 8(10), e021340-e021340. <https://doi.org/10.1136/bmjopen-2017-021340>
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- Hoffman, S. (2010). The evolution, etiology and eventualities of the global health security regime. *Health Policy Plan*, 25(6), 510-522. <https://doi.org/10.1093/heapol/czq037>
- Hoffman, S., Cole, C., & Pearcey, M. (2020). *Mapping global health architecture to inform the future*. https://www.chathamhouse.org/sites/default/files/field/field_document/20150120GlobalHealthArchitectureHoffmanColePearcey.pdf
- Hoffman, S. J., Poirier, M. J. P., Van Katwyk, S. R., Baral, P., & Sritharan, L. (2019). Impact of the WHO Framework Convention on Tobacco Control on global cigarette consumption: Quasi-experimental evaluations using interrupted time series analysis and in-sample forecast event modelling. *BMJ*, 365, l2287-l2287. <https://doi.org/10.1136/bmj.l2287>
- Hoffman, S.J. & Røttingen, J. (2014). Assessing the expected impact of global health treaties: Evidence from 90 quantitative evaluations. *American Journal of Public Health*, 105(1), 26-40. <https://doi.org/10.2105/AJPH.2014.302085>
- Hoffman, S. J., & Silverberg, S. L. (2018). Delays in global disease outbreak responses: Lessons from H1N1, Ebola, and Zika. *American Journal of Public Health*, 108, 329-333. <https://doi.org/10.2105/AJPH.2017.304245>
- Horton, R., & Das, P. (2015). Universal health coverage: Not why, what, or when—but how?. *The Lancet*, 385(9974), 1156-1157. [https://doi.org/10.1016/S0140-6736\(14\)61742-6](https://doi.org/10.1016/S0140-6736(14)61742-6)

- Hotez, P. (2013).** NTDs V.2.0: “Blue marble health”—Neglected tropical disease control and elimination in a shifting health policy landscape. *PLOS Neglected Tropical Diseases*, 7(11), e2570. <https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0002570>
- Hotez, P. J., Dumonteil, E., Woc-Colburn, L., Serpa, J. A., Bezak, S., Edwards, M. S., Hallmark, C. J., Musselwhite, L. W., Flink, B. J., & Bottazzi, M. E. (2012).** Chagas disease: “The new HIV/AIDS of the Americas”. *PLoS Neglected Tropical Diseases*, 6(5), e1498. <https://doi.org/10.1371/journal.pntd.0001498>
- Hsieh, H., & Shannon, S. E. (2005).** Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277–1278. <https://doi.org/10.1177/1049732305276687>
- Huang, P. (2020).** Trump and WHO: How much does the U.S. give? What’s the impact of a halt in funding? *NPR.org*. <https://www.npr.org/sections/goatsandsoda/2020/04/15/834666123/trump-and-who-how-much-does-the-u-s-give-whats-the-impact-of-a-halt-in-funding>
- Hubler, S. (2020).** As colleges move classes online, families rebel against the cost. *The New York Times*. <https://www.nytimes.com/2020/08/15/us/covid-college-tuition.html>
- International Atomic Energy Agency. (1986a).** *Convention on early notification of a nuclear accident* [Information circular no. 335]. <https://www.iaea.org/publications/documents/infcircs/convention-early-notification-nuclear-accident>
- International Atomic Energy Agency. (1986b).** *Convention on assistance in the case of a nuclear accident or radiological emergency* [Information circular no. 336]. <https://www.iaea.org/publications/documents/infcircs/convention-assistance-case-nuclear-accident-or-radiological-emergency>
- International Atomic Energy Agency. (1994).** *Convention on nuclear safety* [Information circular no. 449]. <https://www.iaea.org/publications/documents/infcircs/convention-nuclear-safety>
- International Atomic Energy Agency. (2020).** *IAEA safeguards overview: Comprehensive safeguards agreements and additional protocols*. <https://www.iaea.org/publications/factsheets/iaea-safeguards-overview>
- International Bank for Reconstruction and Development. (2018).** *World development report 2019: The changing nature of work*. World Bank Group. <https://openknowledge.worldbank.org/handle/10986/30435>
- International Commission on the Futures of Education. (2020).** *Protecting and transforming education for shared futures and common humanity: A joint statement on the COVID-19 crisis*. UNESCO. <https://en.unesco.org/futuresofeducation/news/international-commission-releases-joint-statement-education-and-covid-19-crisis>
- International Campaign to Abolish Nuclear Weapons. (2021).** *How the treaty works*. https://www.icanw.org/how_the_tpnw_works
- International Monetary Fund. (2020).** *World economic outlook update, June 2020: A crisis like no other, an uncertain recovery*. <https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020>
- International Monetary Fund. (2021a).** *World economic outlook update, April 2021*. <https://www.imf.org/en/Publications/WEO/Issues/2021/03/23/world-economic-outlook-april-2021>

- International Monetary Fund. (2021b).** *World economic outlook update, July 2021*. <https://www.imf.org/en/Publications/WEO/Issues/2021/07/27/world-economic-outlook-update-july-2021>
- International Monetary Fund. (2021c).** Fiscal monitor, October 2021: Strengthening the credibility of public finances. *International Monetary Fund*. <https://www.imf.org/en/Publications/FM/Issues/2021/10/13/fiscal-monitor-october-2021>
- Irons, J. (2009).** *Economic scarring: The long-term impacts of the recession* [Briefing paper no. 243]. Economic Policy Institute. <https://www.epi.org/publication/bp243/>
- Johns Hopkins Coronavirus Resource Center. (2020).** *COVID-19 case tracker*. Johns Hopkins University. <https://coronavirus.jhu.edu/map.html>
- Jordan, D., Tumpey, T., & Jester, B. (2020).** *The deadliest flu: The complete story of the discovery and reconstruction of the 1918 pandemic virus*. U.S. Centers for Disease Control and Prevention. <https://www.cdc.gov/flu/pandemic-resources/reconstruction-1918-virus.html>
- Kahan, J. (2018).** It's time for a new approach for mapping broadband data to better serve Americans. *Microsoft on the Issues*. <https://blogs.microsoft.com/on-the-issues/2019/04/08/its-time-for-a-new-approach-for-mapping-broadband-data-to-better-serve-americans/>
- Katz, R., & Fischer, J. (2010).** The revised International Health Regulations: A framework for global pandemic response. *Global Health Governance*, 3(2). https://www.ghgj.org/Katz%20and%20Fischer_The%20Revised%20International%20Health%20Regulations.pdf
- Kavanagh, M. M., Gostin, L. O., & Sunder, M. (2021).** Sharing technology and vaccine doses to address global vaccine inequity and end the COVID-19 pandemic. *JAMA: the Journal of the American Medical Association*, 326(3), 219–220. <https://doi.org/10.1001/jama.2021.10823>
- Keates, N. (2020).** Incoming college students could take gap year over COVID-19 uncertainty. *The Wall Street Journal*. <https://www.wsj.com/articles/incoming-college-students-could-take-gap-year-over-covid-19-uncertainty-11588687598>
- Kennedy, S. B., Neaton, J. D., Lane, H. C., Kieh, M. W., Massaquoi, M. B., Touchette, N. A., Nason, M. C., Follmann, D. A., Boley, F. K., Johnson, M. P., Larson, G., Kateh, F. N., & Nyenswah, T. G. (2016).** Implementation of an Ebola virus disease vaccine clinical trial during the Ebola epidemic in Liberia: Design, procedures, and challenges. *Clinical trials (London, England)*, 13(1), 49–56. <https://doi.org/10.1177/1740774515621037>
- Kickbusch, I., Hein, W., & Silberschmidt, G. (2010).** Addressing global health governance challenges through a new mechanism: The proposal for a Committee C of the World Health Assembly. *The Journal of Law, Medicine, and Ethics*, 38(3), 550–63. <https://doi.org/10.1111/j.1748-720X.2010.00511.x>
- Koenig-Archibugi, M. (2011).** Is global democracy possible? *European Journal of International Relations*, 17(3), 519–542. <https://doi.org/10.1177/1354066110366056>
- Lagarde, C., & de Guindos, L. (2020).** Introductory statement to the press conference (with Q&A), April 30, 2020. *European Central Bank*. <https://www.ecb.europa.eu/press/pressconf/2020/html/ecb.is200430~ab3058e07f.en.html>

- Lakner, C., Yonzan, N., Mahler, D. G., Castañeda Aguilar, R. A., & Yu, H. (2021). Updated estimates of the impact of COVID-19 on global poverty: Looking back at 2020 and the outlook for 2021. *World Bank Blogs*. <https://blogs.worldbank.org/opendata/updated-estimates-impact-covid-19-global-poverty-looking-back-2020-and-outlook-2021>
- Lane, P. (2020). The monetary policy response to the pandemic emergency. *European Central Bank Blog*. <https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog200501~a2d8f514a0.en.html>
- Langer, A., Meleis, A., Knaul, F. M., Atun, R., Aran, M., Arreola-Ornelas, H., Bhutta, Z. A., Binagwaho, A., Bonita, R., Caglia, J. M., Claeson, M., Davies, J., Donnay, F. A., Gausman, J. M., Glickman, C., Kearns, A. D., Kendall, T., Lozano, R., Seboni, N., ... & Frenk, J. (2015). Women and health: The key for sustainable development. *The Lancet*, 386(9999), 1165-1210. [https://doi.org/10.1016/S0140-6736\(15\)60497-4](https://doi.org/10.1016/S0140-6736(15)60497-4)
- Lawn, J., Rohde, J., Rifkin, S., Were, M., Paul, V., & Chopra, M. (2008). Alma-Ata 30 years on: Revolutionary, relevant, and time to revitalize. *The Lancet*, 372(9642), 917-927. [https://doi.org/10.1016/S0140-6736\(08\)61402-6](https://doi.org/10.1016/S0140-6736(08)61402-6)
- Leonhardt, D., & Leatherby, L. (2020). Where the virus is growing most: Countries with 'illiberal populist' leaders. *The New York Times*. <https://www.nytimes.com/2020/06/02/briefing/coronavirus-populist-leaders.html>
- Li, S., Bhattacharya, S., & Agarwal, V. (2021). India has undercounted COVID-19 deaths by hundreds of thousands, families and experts say. *The Wall Street Journal*. <https://www.wsj.com/articles/india-has-undercounted-covid-19-deaths-by-hundreds-of-thousands-families-and-experts-say-11624795202>
- Luhnow, D., & Montes, J. (2021). 29 family members fell ill with COVID. Mexico didn't count them. *The Wall Street Journal*. https://www.wsj.com/articles/29-family-members-fell-ill-with-covid-mexico-didnt-count-them-11610642019?mod=article_inline
- Mackey, T. K. (2016). The Ebola outbreak: Catalyzing a "shift" in global health governance?. *BMC Infectious Diseases* 16(699). <https://doi.org/10.1186/s12879-016-2016-y>
- Magalhaes, L., & Forero, J. (2020). 'Go Back to Work': Bolsonaro dismisses risks of deadly coronavirus in Brazil. *The Wall Street Journal*. https://www.wsj.com/articles/bolsonaros-casual-stance-on-coronavirus-meets-resistance-in-brazil-11585846012?mod=article_inline
- Mahler, D., Lakner, C., Castañeda Aguilar, R. A., & Yu, H. (2020). The impact of COVID-19 (coronavirus) on global poverty: Why Sub-Saharan Africa might be the region hardest hit. *World Bank Blogs*. <https://blogs.worldbank.org/opendata/impact-covid-19-coronavirus-global-poverty-why-sub-saharan-africa-might-be-region-hardest>
- Marmot, M. (2005). Marmot, M. (2005). Social determinants of health inequalities. *The Lancet*, 365(9464), 1099-1104. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(05\)71146-6/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(05)71146-6/fulltext)
- Marmot, M. (2012). Health equity: The challenge. *Australian and New Zealand Journal of Public Health*, 36(6), 513. <https://doi.org/10.1111/j.1753-6405.2012.00948.x>

- Marmot, M., Friel, S., Bell, R., Houweling, T. A. J., & Taylor, S. (2008). Closing the gap in a generation: Health equity through action on the social determinants of health. *The Lancet*, 372(9650), 1661–1669. [https://doi.org/10.1016/S0140-6736\(08\)61690-6](https://doi.org/10.1016/S0140-6736(08)61690-6)
- Mathers, C., Ezzati, M., & Lopez, A. (2007). Measuring the burden of neglected tropical diseases: The global burden of disease framework. *PLoS Neglected Tropical Diseases*, 1(2), e114. <https://doi.org/10.1371/journal.pntd.0000114>
- McInnes, C., & Lee, K. (2012). Framing and global health governance: Key findings. *Global Public Health*, 7(sup 2), S191–S198. <https://doi.org/10.1080/17441692.2012.733950>
- McKay, B. (2018). CDC to scale back work in dozens of foreign countries amid funding worries. *The Wall Street Journal*. <https://www.wsj.com/articles/cdc-to-scale-back-work-in-dozens-of-foreign-countries-amid-funding-worries-1516398717>
- Michaels, D. (2020). Most countries fail to capture extent of COVID-19 deaths. *The Wall Street Journal*. https://www.wsj.com/articles/most-countries-fail-to-capture-extent-of-covid-19-deaths-11590658200?mod=hp_lead_pos5
- Mitra, A., & Mawson, A. (2017). Neglected tropical diseases: Epidemiology and global burden. *Tropical Medicine and Infectious Disease*, 2(36). <https://doi.org/10.3390/tropicalmed2030036>
- Moon, S., Leigh, J., Woskie, L., Checchi, F., Dzau, V., Fallah, M., Fitzgerald, G., Garrett, L., Gostin, L., Heymann, D. L., Katz, R., Kickbusch, I., Morrison, J. S., Piot, P., Sands, P., Sridhar, D., & Jha, A. K. (2017). Post-Ebola reforms: Ample analysis, inadequate action. *BMJ (Clinical research ed.)*, 356, j280. <https://doi.org/10.1136/bmj.j280>
- Moon, S., Sridhar, D., Pate, M. A., Jha, A. K., Clinton, C., Delaunay, S., Edwin, V., Fallah, M., Fidler, D. P., Garrett, L., Goosby, E., Gostin, L. O., Heymann, D. L., Lee, K., Leung, G. M., Morrison, J. S., Saavedra, J., Tanner, M., Leigh, J. A., ... Piot, P. (2015). Will Ebola change the game? Ten essential reforms before the next pandemic. The report of the Harvard-LSHTM independent panel on the global response to Ebola. *The Lancet*, 386(10009), 2204–2221. [https://doi.org/10.1016/S0140-6736\(15\)00946-0](https://doi.org/10.1016/S0140-6736(15)00946-0)
- Morens, D. M., & Fauci, A. S. (2013). Emerging infectious diseases: Threats to human health and global stability. *PLOS Pathogens*, 9(7). <https://doi.org/10.1371/journal.ppat.1003467>
- Moretti, F., van Vliet, L., Bensing, J., Deledda, G., Mazzi, M., Rimondini, M., Zimmermann, C., & Fletcher, I. (2011). A standardized approach to qualitative content analysis of focus group discussions from different countries. *Patient Education and Counseling*, 82(3), 420–428. <https://doi.org/10.1016/j.pec.2011.01.005>
- Moulds, J. (2020). *How is the World Health Organization funded?* World Economic Forum. <https://www.weforum.org/agenda/2020/04/who-funds-world-health-organization-un-coronavirus-pandemic-covid-trump/>
- National Academies of Sciences, Engineering, and Medicine. (2017). *Integrating clinical research into epidemic response: The Ebola experience*. The National Academies Press. <https://doi.org/10.17226/24739>
- National Center for Education Statistics. (1997). *Education and the economy: An indicators report* [NCES 97269]. <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=97269>

- Nugent, N. (2003).** *The government and politics of the European Union*. Duke University Press.
- Organisation for Economic Co-operation and Development. (2020).** *Supporting livelihoods during the COVID-19 crisis: Closing the gaps in the safety nets*. <https://www.oecd.org/coronavirus/policy-responses/supporting-livelihoods-during-the-COVID-19-crisis-closing-the-gaps-in-safety-nets-17cbb92d/>
- Pan American Health Organization. (2020).** WHO reveals leading causes of death and disability worldwide: 2000-2019. *PAHO*. <https://www.paho.org/en/news/9-12-2020-who-reveals-leading-causes-death-and-disability-worldwide-2000-2019>
- Pancevski, B., & Chopping, D. (2020).** Scientist behind Sweden's no-lockdown policy says it wasn't strict enough. *The Wall Street Journal*. https://www.wsj.com/articles/scientist-behind-swedens-no-lockdown-policy-says-it-wasnt-strict-enough-11591196353?mod=article_inline
- Park, C. Y., Villafuerte, J., Abiad, A., Narayanan, B., Banzon, E., Samson, J., Aftab, A., & Tayag, M. C. (2020).** *An updated assessment of the economic impact of COVID-19* [ADB briefs no. 133]. Asian Development Bank. <https://www.adb.org/publications/updated-assessment-economic-impact-covid-19>
- Pavone, I. J. (2021).** Security Council Resolution 2532 (2020) on COVID-19: A missed opportunity. *ESIL Reflections*, 9(5). <https://esil-sedi.eu/wp-content/uploads/2021/02/ESIL-Reflection-Pavone.pdf>
- Pelzer, N. (2006).** Learning the hard way: Did the lessons taught by the Chernobyl nuclear accident contribute to improving nuclear law? In *International nuclear law in the Post-Chernobyl period* (NEA no. 6146, pp. 73-118). Nuclear Energy Agency & Organization for Economic Co-operation and Development. <https://www.oecd-neo.org/law/chernobyl/PELZER.pdf>
- Pifarré i Arolas, H., Acosta, E., López-Casasnovas, G., Lo, A., Nicodemo, C., Riffe, T., & Myrskylä, M. (2021).** Years of life lost to COVID-19 in 81 countries. *Scientific Reports* 11(3504). <https://doi.org/10.1038/s41598-021-83040-3>
- Porcelain, S. L. (2015).** Health security challenges in the Americas: Newly emerging and reemerging infectious diseases. In B. M. Bagley, J. D., Rozen, & H. S. Kassab (Eds.), *Reconceptualizing security in the Americas in the twenty-first century* (pp. 265-286). Lexington Books.
- Reddy, C., Mazhar, S., & Lencucha, R. (2018).** The financial sustainability of the World Health Organization and the political economy of global health governance: A review of funding proposals. *Globalization and Health*, 14(19). <https://doi.org/10.1186/s12992-018-0436-8>
- Rizga, K. (2020, 13 April).** What teachers need to make remote schooling work. *The Atlantic*. <https://www.theatlantic.com/education/archive/2020/04/how-remote-school-can-work-covid-19-pandemic/609895/>
- Rohwerder, B. (2020).** *Secondary impacts of major disease outbreaks in low- and middle-income countries* [K4D Helpdesk Report 756]. Institute of Development Studies. https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/15129/756_Secondary_impacts_of_major_disease_outbreak_%20in_low_income_countries.pdf?sequence=81&isAllowed=y

- Rouw, A., Wexler, A., Kates, J., & Michaud, J. (2021). Tracking global COVID-19 vaccine equity. KFF. <https://www.kff.org/coronavirus-covid-19/issue-brief/tracking-global-covid-19-vaccine-equity/>
- St. George, D., Strauss, V., Meckler, L., Heim, J., & Natanson, H. (2021). How the pandemic is shaping education. *The Washington Post*. <https://www.washingtonpost.com/education/2021/03/15/pandemic-school-year-changes/>
- Schreier, M. (2012). *Qualitative content analysis in practice*. SAGE Publications Ltd.
- Schwab, J. (2020). Why combatting a pandemic is 500 times more expensive than preventing one. *The Brink*. <https://www.bu.edu/articles/2020/why-combating-a-pandemic-is-500-times-more-expensive-than-preventing-one/>
- Simmons, A. M. (2020). In Belarus, everyday life is much the same as coronavirus spreads. *The Wall Street Journal*. <https://www.wsj.com/articles/in-belarus-everyday-life-is-much-the-same-as-coronavirus-spreads-11587812401>
- Smith, S.M., Edwards, R., & Duong, H.C. (2021). Unemployment rises in 2020, as the country battles the COVID-19 pandemic. *U.S. Bureau of Labor Statistics*. <https://www.bls.gov/opub/mlr/2021/article/unemployment-rises-in-2020-as-the-country-battles-the-covid-19-pandemic.htm>
- Spiegel, J. M., Breilh, J., & Yassi, A. (2015). Why language matters: Insights and challenges in applying a social determination of health approach in a North-South collaborative research program. *Globalization and Health*, 11(9), 1-17. <https://doi.org/10.1186/s12992-015-0091-2>
- Sreeharsha, V. (2021). COVID-19 batters Brazil, but its leader is more popular than ever. *The Wall Street Journal*. <https://www.wsj.com/articles/covid-19-batters-brazil-but-its-leader-is-more-popular-than-ever-11599998401>
- Sridhar, D., Kickbusch, I., Moon, S., Dzau, V., Heymann, D., Jha, A. K., Saavendra, J., Stocking, B., Woskie, L., & Piot, P. (2016). Facing forward after Ebola: Questions for the next director general of the World Health Organization. *BMJ*, 353, i2666. <https://doi.org/10.1136/bmj.i2666>
- studentPOLL. (2020, April). Looking ahead to Fall 2020: How COVID-19 continues to influence the choice of college-going students. *Art & Science Group*. <https://www.artsci.com/studentpoll-covid-19-edition-2>
- Tariq, A., Roosa, K., Mizumoto, K., & Chowell, G. (2019). Assessing reporting delays and the effective reproduction number: The Ebola epidemic in DRC, May 2018-January 2019. *Epidemics*, 26, 128–133. <https://doi.org/10.1016/j.epidem.2019.01.003>
- Tobben, S. (2020). Negative prices for oil: Here's what that means. *Bloomberg News*. <https://www.bloomberg.com/news/articles/2020-04-20/negative-prices-for-oil-here-s-what-that-means-quicktake>
- UNESCO. (2020). *COVID-19 educational disruption and response*. United Nations. <https://en.unesco.org/news/covid-19-educational-disruption-and-response>
- UNICEF. (2020a). *COVID-19: More than 95 per cent of children are out of school in Latin America and the Caribbean* [Press release]. United Nations. https://www.unicef.org/press-releases/covid-19-more-95-cent-children-are-out-school-latin-america-and-caribbean#_ftn1/

- UNICEF. (2020b).** *COVID-19: Are children able to continue learning during school closures?* UNICEF Data. <https://data.unicef.org/resources/remote-learning-reachability-factsheet/>
- United Nations. (2015).** *Promote inclusive and sustainable economic growth, employment and decent work for all.* United Nations. <https://www.un.org/sustainabledevelopment/economic-growth/>
- United Nations. (2016a).** *Protecting humanity from future health crises: report of the High-Level Panel on the Global Response to Health Crises.* United Nations. https://reliefweb.int/sites/reliefweb.int/files/resources/2016-02-05_Final_Report_Global_Response_to_Health_Crises.pdf
- United Nations. (2016b).** *Global health and foreign policy – Note by the Secretary-General.* United Nations. <https://digitallibrary.un.org/record/849758?ln=en>
- United Nations. (2020a).** *COVID-19 likely to shrink global GDP by almost one per cent in 2020.* United Nations. <https://www.un.org/sustainabledevelopment/blog/2020/04/covid-19-likely-to-shrink-global-gdp-by-almost-one-per-cent-in-2020/>
- United Nations. (2020b).** *Education during COVID-19 and beyond.* United Nations. https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg_policy_brief_covid-19_and_education_august_2020.pdf
- United Nations. (2021).** *Our common agenda - Report of the Secretary-General.* <https://www.un.org/en/content/common-agenda-report/#download>
- United Nations Climate Change. (2018).** *Key aspects of the Paris Agreement.* United Nations Climate Change. <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement/key-aspects-of-the-paris-agreement>
- United Nations Development Programme. (2013).** *Addressing the social determinants of noncommunicable diseases* [Discussion paper]. https://www.undp.org/content/dam/undp/library/hiv/aids/English/Discussion_Paper_Addressing_the_Social_Determinants_of_NCDs_UNDP_2013.pdf
- United Nations Development Programme. (2017).** *UNDP Health Implementation Support partnership with the Global Fund: Annual report 2016-2017.* <https://www.undp-capacitydevelopment-health.org/en/about-us/annual-reports/annual-report-2017/>
- United Nations Development Programme, & International Federation of Red Cross and Red Crescent Societies. (2017).** *A socio-economic impact assessment of the Zika virus in Latin America and the Caribbean: With a focus on Brazil, Colombia and Suriname.* <https://www.undp.org/content/dam/undp/library/HIV-AIDS/UNDP-Zika-04-03-2017-English-WEB.pdf>
- United Nations World Tourism Organization. (2020).** *International tourism expected to decline over 70% in 2020, back to levels of 30 years ago.* *UNWTO World Tourism Barometer*, 18(7). <https://www.e-unwto.org/doi/epdf/10.18111/wtobarometereng.2020.18.1.7>
- United Nations World Tourism Organization. (2022).** *UNWTO World Tourism Barometer and Statistical Annex, March 2022.* *UNWTO World Tourism Barometer*, 20(2). <https://www.e-unwto.org/doi/epdf/10.18111/wtobarometereng.2022.20.1.2>

- United Nations World Tourism Organization. (2021).** International travel largely on hold despite uptick in May 2021. *UNWTO World Tourism Barometer*, 19(4). <https://www.e-unwto.org/doi/epdf/10.18111/wtobarometereng.2021.19.1.4>
- Walsh, B. (2020, 25 March).** Covid-19: The history of pandemics. *BBC: Future*. <https://www.bbc.com/future/article/20200325-covid-19-the-history-of-pandemics>
- Weisman, J., & Stolberg, S. G. (2021).** As virus resurges, G.O.P. lawmakers allow vaccine skepticism to flourish. *The New York Times*. <https://www.nytimes.com/2021/07/20/us/politics/republicans-coronavirus.html>
- West, M. G. (2021).** COVID-19 mask mandates are again at center of political battles. *The Wall Street Journal*. <https://www.wsj.com/articles/covid-19-mask-mandates-are-again-at-center-of-political-battles-11619208934>
- Wood, N. (2001).** *The health project book*. Routledge.
- Wooley, S., Sattiraju, N., & Moritz, S. (2020).** U.S. schools trying to teach online highlight a digital divide. *Bloomberg News*. <https://www.bloomberg.com/news/articles/2020-03-26/covid-19-school-closures-reveal-disparity-in-access-to-internet>
- Woolf, S., & Braveman, P. (2011).** Where health disparities begin: The role of social and economic determinants—And why current policies may make matters worse. *Health Affairs*, 30(10). <https://doi.org/10.1377/hlthaff.2011.0685>
- World Bank. (1993).** *World development report 1993: Investing in health*. Oxford University Press. <https://openknowledge.worldbank.org/handle/10986/5976>
- World Bank. (2020a).** *Global economic prospects, June 2020*. <https://openknowledge.worldbank.org/handle/10986/33748>
- World Bank. (2020b).** *Overview: Reversals of fortune. Poverty and shared prosperity 2020*. International Bank for Reconstruction and Development. <https://openknowledge.worldbank.org/bitstream/handle/10986/34496/211602ov.pdf>
- World Bank Group. (2017).** *World development report 2017: Governance and the law*. <https://openknowledge.worldbank.org/handle/10986/25880>
- World Bank Group. (2021).** *Education finance watch 2021*. <https://thedocs.worldbank.org/en/doc/507681613998942297-0090022021/original/EFWReport2021219.pdf>
- World Health Assembly. (2006).** *International Health Regulations 2005* (3rd ed.). World Health Organization. <https://www.who.int/publications/i/item/9789241580496>
- World Health Organization. (2006).** *Constitution of the World Health Organization*. <https://apps.who.int/gb/bd/PDF/bd47/EN/constitution-en.pdf>
- World Health Organization. (2015).** *Report of the Ebola Interim Assessment Panel*. https://cdn.who.int/media/docs/default-source/documents/evaluation/report-ebola-interim-assessment-panel.pdf?sfvrsn=df4e705d_2&download=true
- World Health Organization. (2019).** *International Health Regulations (2005) monitoring framework: Implementation status of IHR core capacities, 2018*. https://gamapserver.who.int/gho/interactive_charts/ihrspar/atlas10.html
- World Health Organization. (2020a).** *World health data platform: Physicians density (per 1000 population)*. [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/physicians-density-\(per-1000-population\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/physicians-density-(per-1000-population))

- World Health Organization. (2020b).** *World health data platform: Hospital beds (per 10 000 population)*. [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/hospital-beds-\(per-10-000-population\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/hospital-beds-(per-10-000-population))
- World Health Organization. (2020c).** *Malaria eradication: Benefits, future scenarios & feasibility. A report of the strategic advisory group on malaria eradication*. <https://www.who.int/publications/i/item/9789240003675>
- World Health Organization. (2020d).** *How WHO is funded*. <https://www.who.int/about/planning-finance-and-accountability/how-who-is-funded>
- World Health Organization. (2020e).** *Global health estimates 2020: Disease burden by cause, age, sex, by country and by region, 2000-2019*. <https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/global-health-estimates-leading-causes-of-dalys>
- World Health Organization. (2021a).** *The Global Health Observatory (GHO) Data: HIV/AIDS*. <https://www.who.int/data/gho/data/themes/hiv-aids>
- World Health Organization. (2021b).** *Noncommunicable diseases*. <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>
- World Health Organization. (2021c).** *Statement to the Working Group on Sustainable Financing of WHO by Rt Hon Gordon Brown, WHO Ambassador for Global Health Financing*. <https://www.who.int/director-general/speeches/detail/rt-hon-gordon-brown-who-ambassador-for-global-health-financing>
- World Health Organization Evaluation Office. (2017).** *Evaluation of the WHO Secretariat's contribution to the health-related Millennium Development Goals (Vol. 2)*. Pre-publication version. https://cdn.who.int/media/docs/default-source/documents/evaluation/annex-evaluation-of-health-mdgs.pdf?sfvrsn=1f526af2_2
- Zafar, A., Talati, C., Graham, E., Panzer, J., Sakho, S., & Budkin, Y. (2016).** *2014-2015 West Africa Ebola crisis: Impact update*. The World Bank Group. <https://www.worldbank.org/en/topic/macroeconomics/publication/2014-2015-west-africa-ebola-crisis-impact-update>
-

Carmencita Alberto-Banatin, M.D., M.H.A.

*Former Director, Philippines Health Emergency Management Bureau
Panelist, WHO Ebola Interim Assessment Panel*

MANILA, PHILIPPINES

Daniel Bausch, M.D., M.P.H. & T.M., FASTMH

*Director, UK Public Health Rapid Support Team
Professor, London School of Hygiene & Tropical Medicine
UK Representative, WHO Global Outbreak Alert and Response Network
Steering Committee*

Co-Founder, Doctors for Global Health

LONDON, UNITED KINGDOM

Stefano Bertozzi, M.D., Ph.D.

*Dean Emeritus & Professor of Health Policy and Management,
Interim Director, UC systemwide programs with Mexico
Co-Director, Berkeley Public Health China Program University of California, Berkeley
Member, National Academy of Medicine*

BERKELEY, UNITED STATES

Akua Sena Dansua, M.A.

*Regional Chair of Western and Central Africa, UNITE Global Parliamentarians Network
to End Infectious Diseases
Founder, Advocates for Gender and Development Initiatives-Ghana
Former Ambassador of Ghana to Germany with concurrent accreditation to Estonia,
Latvia, Lithuania and Poland
Former Minister for Tourism, Minister for Youth and Sports and Minister for Women
and Children's Affairs and former three-term Member of Parliament*

ACCRA, GHANA

Carlos del Rio, M.D.

*Distinguished Professor of Medicine, Global Health and Epidemiology, Emory University
School of Medicine and Rollins School of Public Health
Executive Associate Dean of Emory School of Medicine at Grady Health System
PI and Co-Director of the Emory Center for AIDS Research (CFAR)
Member and Foreign Secretary, National Academy of Medicine*

ATLANTA, UNITED STATES

*Former Executive Director of CENSIDA, Mexico's National Center for the Prevention
and Control of HIV/AIDS*

MEXICO CITY, MEXICO

Julio J. Frenk, M.D., Ph.D., M.P.H.

President, University of Miami

*Professor of Public Health Sciences and Health Sector Management and Policy,
University of Miami Leonard M. Miller School of Medicine and School of
Business Administration*

Board Member, United Nations Foundation

Member, National Academy of Medicine

*Member, National Academy of Sciences Independent Commission on a Global Health
Risk Framework for the Future*

Panelist, WHO Ebola Interim Assessment Panel

MIAMI, UNITED STATES

Former Minister of Health of Mexico

Former Director-General and Founder, National Institute of Public Health in Mexico

MEXICO CITY, MEXICO

Sandro Galea, M.D. M.P.H., Dr.PH.

Dean and Robert A. Knox Professor, School of Public Health, Boston University

Professor of Family Medicine, Boston University School of Medicine

Chair, Board of the Association of Schools and Programs of Public Health

*Chair, The Rockefeller Foundation-Boston University Commission on Health
Determinants, Data, and Decision-making*

Member, National Academy of Medicine

BOSTON, UNITED STATES

Laurie Garrett

Pulitzer Prize-Winning Science Journalist

Featured Columnist, Foreign Policy

Former Senior Fellow for Global Health, Council on Foreign Relations

Panelist, Harvard-LSHTM Independent Panel on the Global Response to Ebola

NEW YORK, UNITED STATES

Lawrence O. Gostin, J.D.

*University Professor and Founding O'Neill Chair in Global Health Law,
Georgetown University*

Director, O'Neill Institute for National and Global Health Law

Professor of Medicine and Public Health, Johns Hopkins University

Director, WHO Collaborating Center on National and Global Health Law

Member, National Academy of Medicine

*Member, National Academy of Sciences Independent Commission on a Global Health
Risk Framework for the Future*

Panelist, Harvard-LSHTM Independent Panel on the Global Response to Ebola

Senior Advisor, UN Secretary General's Post-Ebola Commission

*Member, Drafting Committee for G-7 Summit on Global Health Security and
Universal Health Coverage (2016)*

WASHINGTON D.C., UNITED STATES

Steven J. Hoffman, J.D., Ph.D., M.A.

Professor of Global Health, Law, and Political Science and Dahdaleh Distinguished Chair in Global Governance & Legal Epidemiology at York University
Director, Global Strategy Lab
Director, WHO Collaborating Centre on Global Governance of Antimicrobial Resistance
Scientific Director, Institute of Population & Public Health, Canadian Institutes of Health Research
TORONTO, CANADA

Ashish Jha, M.D., M.P.H.

Director, Harvard Global Health Institute
K.T. Li Professor of International Health & Health Policy and Medicine, Harvard T.H. Chan School of Public Health and Harvard Medical School
Internal Medicine Physician, VA Boston Healthcare System
Member, National Academy of Medicine
Co-Chair, Harvard-LSHTM Independent Panel on the Global Response to Ebola
CAMBRIDGE, UNITED STATES

Maksut Kulzhanov, M.D., Ph.D.

Professor and Founder, Kazakhstan School of Public Health
Chair, Republican Medical Chamber
Committee Member, WHO European Advisory Committee on Health Research
Former Khazakhstan Deputy Minister of Health
Former Director-General, Republican Center for Health Development
NUR-SULTAN, KAZAKHSTAN

Kelley Lee, D. Phil., M.A., M.P.A.

Professor and Tier 1 Canada Research Chair in Global Health Governance, Faculty of Health Sciences, Simon Fraser University
Fellow, UK Faculty of Public Health and Canadian Academy of Health Sciences
Co-founder, WHO Collaborating Centre on Global Change and Health
Chair, WHO Expert Group on Globalization, Trade and Health
Panelist, Harvard-LSHTM Independent Panel on the Global Response to Ebola
BURNABY, CANADA

Ricardo Baptista Leite, M.D.

Vice-President of the Social Democratic Party Parliamentary Board, National Parliament of Portugal
President and Founder, UNITE Global Parliamentarians Network to End Infectious Disease
Vice President, Parliamentary Network on The World Bank & International Monetary Fund
Global Ambassador, G20 Health & Development Partnership
Founder, CREATING HEALTH – Research and Innovation Funding, Católica University of Portugal
LISBON, PORTUGAL

Stephen H. Lewis, CC

Co-Founder and Co-Director, AIDS-Free World
Co-Founder and Board Co-Chair, Stephen Lewis Foundation
Former Canadian Ambassador to the United Nations
Former United Nations Special Envoy for HIV/AIDS in Africa
Former Deputy Executive Director, UNICEF
Emeritus Board Member, International AIDS Vaccine Initiative

TORONTO, CANADA

Barry Pakes, M.D., M.P.H., CCFP, DTMH, FRCPC, Ph.D.

Director, Public Health and Preventive Medicine
Residency Program, Dalla Lana School of Public Health, University of Toronto
Program Director of the Global Health Initiative and Global Health Lead for
Postgraduate Medical Education, University of Toronto
Associate Medical Officer of Health, City of Toronto
Emergency Medicine and Primary Care Physician, Ontario Health System

TORONTO, CANADA

Former Deputy Chief Medical Officer of Health of Nunavut

IQALUIT, NUNAVUT, CANADA

Hon. Esther M. Passaris, M.P., Order of Grand Warrior

Member and Committees on Health, and the Special Funds Account,
National Assembly of the Republic of Kenya
Regional Chair of Eastern and Southern Africa, UNITE Global Parliamentarians
Network to End Infectious Disease
Founding Member, Kenya Parliamentary Caucus on Sustainable Development Goals
(SDGs)
Business Founder, Adopt-A-Light Ltd.

NAIROBI, KENYA

Carl Reddy, M.B.B.Ch, FCPHM, M.Sc.

Director, Training Programs in Epidemiology and Public Health Interventions
Network (TEPHINET)

ATLANTA, UNITED STATES

Former Director, South African Field Epidemiology Training Programme (SAFETP),
National Institute of Communicable Disease of South Africa

Participant, Task Force for Global Health

Former Board of Directors Member, African Field Epidemiology Network

PRETORIA, SOUTH AFRICA

Gisela Scaglia

Member and Committees on Education Portfolio, Welfare State, and Family,
Women and Children, House of Representatives of Argentina
Regional Chair of Latin America & the Caribbean, UNITE Global Parliamentarians
Network to End Infectious Diseases
Co-President for Latin America, Global TB Caucus
Associate Professor of Political Analysis, Department of Political Science,
Universidad Nacional de Entre Ríos

GÁLVEZ, ARGENTINA

Jaime A. Sepúlveda, M.D., D.Sc., M.Sc., M.P.H.

*Distinguished Professor of Global Health, Epidemiology & Biostatistics,
University of California, San Francisco
Executive Director and Member of UCSF Chancellor's Cabinet, UCSF Institute for
Global Health Sciences, University of California, San Francisco
Member, National Academy of Sciences*

SAN FRANCISCO, UNITED STATES

*Founder, National AIDS Council of Mexico
Former Director of Integrated Health Solutions Development, Global Health,
Bill and Melinda Gates Foundation
Former Director-General of Epidemiology and Vice-Minister of Health of Mexico*

MEXICO CITY, MEXICO

Cyrus Shahpar, M.D., M.B.A., M.P.H.

*COVID-19 Data Director, The White House
Former Director of Prevent Epidemics Project, Resolve to Save Lives Initiative,
Vital Strategies
Former Team Lead, Global Rapid Response Team, U.S. Centers for Disease Control
and Prevention*

WASHINGTON, D.C., UNITED STATES

Donna Shalala, M.A., Ph.D.

*Former Member and Committees on Rules, and Education and Labor, House of
Representatives of the United States
Former Secretary of Health and Human Services, United States Department
of Health and Human Services
Former President, University of Miami
Member, National Academy of Medicine*

MIAMI, UNITED STATES

Kirit Premjibhai Solanki, M.B.B.S., M.Sc., FICS

*Member, Chairperson of Committee on Welfare of Scheduled Castes and Scheduled
Tribes and Member of Standing Committee on Finance and Panel of
Chairpersons, House of the People, Indian Parliament
Governing Body Member, Indian Forum of Parliamentarians on AIDS*

AHMEDABAD, INDIA

***Barbara M. Stocking, M.A., Dame Commander
of the British Empire***

*Chair, Panel for a Global Public Health Convention
Former President, Murray Edwards College, University of Cambridge
Former Chief Executive, Oxfam GB
Chair, WHO Ebola Interim Assessment Panel*

CAMBRIDGE, UNITED KINGDOM

Andrew J. Ullmann, M.D., FIDSA, FESCMID

*Member and Spokesperson of Committee on Health for Free Democrats
Member of the German Bundestag
Professor, Department of Infectious Diseases, University Hospital of Würzburg
Regional Chair of Western and Central Europe, UNITE Global
Parliamentarians Network*

WÜRZBURG, BERLIN, GERMANY

Michael Weinstein

*Founder and President, AIDS Healthcare Foundation
The largest HIV Treatment & Advocacy Organization in the World with over 1 Million
Patients in Treatment in 40 Countries in Africa, Asia, Europe, the USA,
Latin America & The Caribbean.*

LOS ANGELES, UNITED STATES

José Zuniga, Ph.D., M.P.H.

*President and Trustee, International Association of Providers of AIDS Care (IAPAC)
Director-General and Trustee, Fast Track Cities Institute (FTCI)
Member, UNAIDS Scientific and Technical Advisory Committee*

WASHINGTON, D.C., UNITED STATES

PHOTO CAPTIONS

- Page 21 - Pompano Beach, Florida, USA - July 30, 2020: Food Distribution with Pompano Beach BSO officers and Pompano Beach Fire Department, volunteers at Pompano Beach Mall parking lot.
- Page 28 - Geneva, Switzerland - December 3, 2019: World Health Organization (WHO / OMS) Headquarters.
- Page 29 - Committee discussions on the closing day of the 71st World Health Assembly. ©WHO A.Tardy.
- Page 59 - Las Pinas, Metro Manila, Philippines - April 2021: A basketball court used as a mass vaccination area for Covid-19. People with face masks and face shields wait their turn to be vaccinated.
- Page 64 - Ruteng Puu traditional village, Flores, Indonesia - August 2018: A village head talking to his family. He is the community leader of their tribe.
- Page 97, Top Row, Center - Crawley, Sussex, UK - August 5, 2020: The bar and restaurant chain Wetherspoon with customers queuing for service in Gatwick Airport.
- Page 97, Top Row, Right - Lubin, Poland - October 23, 2020: Trading on the stock exchange during the Covid-19 pandemic.
- Page 97, Second Row, Image 2 - Cyclades Archipelago, Greece - September 26, 2020: Passengers on board the ferry wearing protective masks during the Covid-19 pandemic.
- Page 97, Second Row, Image 3 - Chicago, Illinois, United States - April 1, 2020: CTA Bus Drivers in masks taking a break near Foster and Broadway.
- Page 106 - Burdwan, West Bengal, India - April 17, 2021: Voters are casting their votes at the polling booths in Purba Bardhaman district under the Covid-19 situation in the presence of central security forces.
- Page 107, Top - Wake Forest, NC, United States - October 15, 2020: North Carolina voters stand in very long lines to cast their ballots on the first day of early voting.
- Page 107, Bottom - Yogyakarta, Indonesia - September 17, 2019: The Royal Court of Yogyakarta has just held Hajad Dalem Jamasan Pusaka, Meanwhile, the Jamasan Pusaka Rata (carriage) was held at the Yogyakarta.
- Page 116 - Ghaziabad, Uttar Pradesh, India - May 3, 2021: India faces shortage of medical oxygen, a Covid-19 patient wearing an oxygen mask receives free oxygen in Langar outside Gurudwara Sri Guru Singh Sabha.
- Page 120 - Meru, Kenya, Africa - January 2007: Sarah Kilemi, wife of Parliament member Kilemi Mwiria, speaks to "Women without Husbands" women who have been ostracized from society.
- Page 150, Row 1, Image 1 - Doha, Qatar - July 1, 2020: The faithful praying with face masks at a mosque. Mosques reopened to worshippers after weeks of closure as a preventive measure against the Covid-19 pandemic.
- Page 150, Row 1, Image 2 - Planaltina, Goias, Brazil - July 25, 2020: Two women wearing a protective mask while waiting for food at a distribution center for the poor of the community.
- Page 150, Row 1, Image 3 - Fatehabad, Haryana, India - March 26, 2020: Close up face Asian aged man wearing medical facial mask to prevent virus or disease from the air.
- Page 150, Row 2, Image 4 - Loei, Thailand - March 28, 2020: Portrait of doctor in protective clothes during coronavirus pandemic.
- Page 150, Row 3, Image 1 - Managua, Nicaragua - August 1, 2020, A promising girl with a face mask gathered at the Church of the Sierritas in Managua to pay her promises to Santo Domingo de Guzmán.
- Page 150, Row 3, Image 2 - Havana, Cuba - December 16, 2020: Volunteers dressed in medical clothing and face protection masks help in the celebrations of the San Lazaro festivities in Cuba.
- Page 150, Row 3, Image 4 - Jerusalem, Israel - July 12, 2020: Coronavirus soars among Ultra-Orthodox Jews. Religious Jewish young man wearing protective mask rides the scooter.
- Page 50, Row 4, Image 2 - Delhi, India - May 17, 2020: Poor children waiting in line for food distributed by a charitable trust in Delhi.
- Page 150, Row 4, Image 3 - Beawar, Rajasthan, India - June 20, 2020: Anganwadi workers practice yoga on the eve of International Yoga Day, amid Covid-19 lockdown in Beawar. Yoga is a physical, mental and spiritual practice.
- Page 150, Row 5, Image 3 - Mumbai, India - May 13, 2020: A women wearing mask during a nationwide lockdown to fight the spread of the Covid-19 coronavirus.
- Page 150, Row 5, Image 4 - Miami, FL, USA - June 7, 2020: White and black boys together. Friends. Anti racism demonstration.

*A Global Public Health Convention
for the 21st Century:*

TO PREVENT THE NEXT PANDEMIC



UNIVERSITY OF MIAMI
MILLER SCHOOL OF MEDICINE
DEPARTMENT of
PUBLIC HEALTH SCIENCES



AHF

GLOBAL PUBLIC HEALTH INSTITUTE
at the UNIVERSITY OF MIAMI

Report Available for Download:
globalpublichealthconvention.org

For More Information:
info@ahfinstitute.org