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T7 Task Force Global health

POLICY BRIEF

G7: DATA FOR PANDEMIC PREPAREDNESS

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Rick A. Bright, Ph.D Pandemic Prevention Institute, The Rockefeller Foundation

Rebecca Katz, Ph.D Center for Global Health and Science and Security, Georgetown University

Bruce Gellin, MD, MPH Pandemic Prevention Institute, The Rockefeller Foundation



Abstract

The COVID-19 pandemic has clearly demonstrated the importance of surveillance data in detecting and responding to an infectious disease event. Disease surveillance data is currently a mélange of types and sources, of differing validity and usefulness. Today, the primary source of surveillance data are healthcare providers, laboratories, and local health departments. However, relying on these sources alone can miss events in populations that may not be able to access quality healthcare. There are myriad proposals for using new technologies, but few that integrate critical humans who can interpret data and find the signal in the noise that requires action. There is no comprehensive structure for rapidly and equitably collecting and analyzing data needed to extract actionable insights that will inform decision-making to mount a robust response. But even more critical are many disincentives – economic and political – that prevent transparent sharing of essential data from traditional and nontraditional sources. It is vital that emerging and re-emerging infectious diseases with outbreak and pandemic potential can be identified faster. Time matters. Delays lead to loss of lives as well as economical and societal disruption.

Challenges

The world relies on disease surveillance data from a range of sources and systems to assess the risk of global health threats. The global community – governments working hand-in-hand with the private sector and civil society – must commit to building and sustaining disease surveillance capabilities to prevent being blindsided by the next emerging pandemic threat. This includes strengthening capacity and capabilities in laboratories in every region of the world to sequence viruses and bacteria found in day-to-day clinical settings; a public health workforce that can analyze data; implementing syndromic surveillance and mining and triangulating data from nontraditional sources to complement indicator-based surveillance; supporting national healthcare workforces that can ensure access to care in all countries, and engaging citizen scientists in early warning of public health events.

Importantly, while the value of genomic sequence data (GSD) for the identification of SARS-CoV-2 variants has become clear to all, GSD alone is not sufficient to trigger action in response to identification of a newly detected pathogen. It is necessary to link genomic sequence data with additional data, e.g. the metadata of clinical, epidemiological, biological function, to validate and assess the risk that will trigger early response actions, and create data standards that will facilitate cross-talk.

It is also not enough to only build the necessary infrastructure and data-relevant capabilities in all countries; developing and validating data, standardizing data formats and innovative approaches to analyzing data. We must also build an architecture for data governance.¹ Rapid and comprehensive information sharing, including during public health emergencies, has long been one of the most challenging issues in global health security and outbreak response. Since the coining of the term ‘viral sovereignty’ to the debates over access and benefit sharing, to the challenges of travel restrictions as a consequence of rapid sharing of genomic sequence data, access to information, the sharing of its benefits, and the travel and trade consequences, have been divisive issues.²

The COVID-19 pandemic, and developments in international law across fields, has brought to the forefront information and data governance challenges associated with accessing, utilizing, and sharing the benefits of GSD. Across multiple fields, perspectives, and priorities, the debate around GSD encompasses the importance of rapid analysis of critical information to save lives, as well as the equitable access to lifesaving measures that can be developed from GSD, such as vaccines, diagnostics, and therapeutics. It touches upon efforts to build technological capacity to sequence genomes around the world, as well as the potential consequences of sharing, or potentially withholding, data. Finding common ground is a particular challenge given diverse stakeholders, competing incentives and disincentives, including those related to providing access, those demanding access, those providing benefits, those demanding benefits, and those governing different aspects of information sharing, from the community to regional, national, and international actors.

Several key international agreements influence information sharing and GSD. There are the international instruments adopted within the ambit of the World Health Organization (WHO), including the International Health Regulations (which includes obligations on information sharing, but with limited definitions and interpretations as to the scope and implementation) and the Pandemic Influenza Preparedness Framework

(an access and benefit sharing instrument consistent with the Nagoya Protocol of the Convention on Biological Diversity, but limited only to human influenza virus samples with pandemic potential, with GSD inclusion deferred). Beyond the WHO and global health field, the Nagoya Protocol and national implementing legislation provide governance for data sharing as benefits, but application of access obligations to GSD (e.g. obtaining the origin country's prior informed consent on mutually agreed terms) is evolving. Multiple proposals for GSD information sharing under the Nagoya Protocol are being debated amongst Member States to include everything from the status quo to payment for access to GSD information, to a levy on retail sales of genetic resources.

Platforms for sharing data have emerged, each with their own terms of use and data protection plans, including GISAID, where the majority of global SARS-CoV-2 sequence data have been shared. WHO efforts have included the development of the proposed Biohub, with pathogen sharing potentially to be governed by standard material transfer agreements (SMTAs), as well as the launch of the WHO Berlin Hub for Pandemic and Epidemic Intelligence that aims to develop data science systems to enhance public health surveillance and facilitate information sharing.

Throughout this web of agreements, national legislation and data sharing arrangements, multiple efforts have been made to establish agreed upon principles for information sharing during emergencies. WHO led consultations in 2015 to affirm the importance of timely and transparent sharing of data during public health emergencies. Additional principles were published in August 2020 and just recently WHO convened a dialogue specifically on GSD.³ The Wellcome Trust and funded networks have actively engaged in this space, bringing together stakeholders to agree upon principles, including agreements from scientific journals.⁴ The Rockefeller Foundation is actively funding partners around the world to connect data and share insights derived from local data to contribute to evidence-based decision making.⁵

Proposals

As we reflect on the COVID-19 pandemic with an eye towards building more robust systems to ensure global health security, the G7 must show continued leadership in supporting the development, and sustainment of not just the capabilities to conduct timely and informative disease surveillance within every jurisdiction around the world, but also the critical need for equitable data governance schematics. G7 leadership should underscore the notion that surveillance is not just for the most developed nations but will indeed – with the right collaborations and governance instruments – benefit all populations.

We call on the G7 to:

1. Support and invest in the development of national and subnational surveillance systems, including:
 - a. The need for data standards.
 - b. The integration of nontraditional surveillance data to improve early detection of pathogens.
2. Acknowledge that as the majority of emerging infectious disease are derived from the human-animal-environment interface, a one-health approach to surveillance is critical. In addition to

strengthening the systems themselves, attention must also be paid to mitigate the disincentives that such a system may create (e.g. trade and food insecurity.)

3. Emphasize the importance of environmental surveillance (e.g., wastewater and air) as an early warning tool and commit to supporting the establishment, standardization and sustainment of environmental surveillance as a critical component of pandemic preparedness.
4. Support the recommendations for investments as outlined in the ‘Investing in preparedness/public health infrastructure’ paper, as these capacities are critical for disease surveillance and population health.
5. Commit to strengthening platforms for sharing disease surveillance data, including for GSD, and working with GISAID and others to ensure access to information while protecting and acknowledging the work of contributors.
6. Commit to reaching agreements, and ensuring alignment of multiple agreements, on access and benefit sharing so that all nations will benefit from participation on pathogen and information sharing regimes.

Disclaimer

All authors are responsible for the content and recommendations contained within this policy brief. The policy brief has been written as part of a consultation process for the T7 Taskforce for Global Health, led by Taskforce’s Co-Chairs Ilona Kickbusch, Anna-Katharina Hornidge and Githinji Gitahi, but it does not represent the official position of the Taskforce or the authors’ employers.

Endnotes

¹ Modjarrad K, Moorthy VS, Millett P, Gsell P-S, Roth C, Kieny M-P (2016) Developing Global Norms for Sharing Data and Results during Public Health Emergencies. PLoS Med 13(1): e1001935.

² The Graduate Institute Geneva Global Health Centre. Understanding the norms and practices of pathogen-sharing to improve global health security. The Graduate Institute Geneva Global Health Centre. 2021. Available at: <https://www.graduateinstitute.ch/research-centres/global-health-centre/understanding-norms-and-practices-pathogen-sharing-improve>

³ WHO. Global genomic surveillance strategy for pathogens with pandemic and epidemic potential 2022-2032. Available at: https://cdn.who.int/media/docs/default-source/genomic-surveillance-strategy/who_genomic_surveillance_strategy_draft_301121.pdf?sfvrsn=7978468b_4

⁴ Wellcome Trust. Statement on data sharing in public health emergencies. 2016. Available at: [https://wellcome.org/press-release/statement-data-sharing-public-health-emergencies; Coronavirus \(COVID-19\): sharing research data.2020. Available at: https://wellcome.org/press-release/sharing-research-data-and-findings-relevant-novel-coronavirus-ncov-outbreak](https://wellcome.org/press-release/statement-data-sharing-public-health-emergencies; Coronavirus (COVID-19): sharing research data.2020. Available at: https://wellcome.org/press-release/sharing-research-data-and-findings-relevant-novel-coronavirus-ncov-outbreak)

⁵ The Rockefeller Foundation. Implementation Framework: Toward a National Genomic Surveillance Network. 2022. Available at: <https://www.rockefellerfoundation.org/wp-content/uploads/2021/03/Toward-a-National-Genomic-Surveillance-NetworkFINAL.pdf>

About the Authors

Dr. Rick Bright, Ph.D, Pandemic Prevention Institute, The Rockefeller Foundation



Dr. Rick Bright joined the Rockefeller Foundation as Senior Vice President of Pandemic Prevention and Response to lead the development of the Foundation’s pandemic data and action platform that will prevent future pandemics by identifying and responding to the earliest alerts of a disease outbreak and stopping it in the first 100 days. Bright has extensive experience in global public health, working with the U.S. Center for Disease Control and Prevention (CDC), PATH and the private sector making key advancements in vaccine and therapeutic developments for influenza viruses with pandemic potential and new vaccine, treatment and testing technologies.

For several decades Bright has been instrumental on the frontlines of work to address international response plans and innovation to address emerging infectious diseases.

He has served as a key advisor in a number of roles, including in the development of the Coalition for Epidemic Preparedness Innovations (CEPI), the WHO Research and Development Blueprint for Action to Prevent Epidemics, the WHO Global Action Plan for Influenza vaccines, and the National Academies of Sciences, Engineering & Medicine Forum on Microbial Threats.

He led and coordinated the U.S. and global medical countermeasure development for the 2014 MERS outbreak (another coronavirus) and served as Incident Commander for medical countermeasure response against the Zika virus in 2016.

Most recently Bright served the U.S. Department of Health and Human Services as the Deputy Assistant Secretary for Preparedness and Response and Director of the esteemed Biomedical Advanced Research and Development Authority (BARDA). Bright resigned from government service in protest over the Trump administration’s approach to handling the Covid-19 pandemic, specifically over the level of political interference over science and the spread of inaccurate information that he said was ‘dangerous, reckless and causing lives to be lost’.

Dr. Rebecca Katz, Ph.D, Center for Global Health Science and Security, Georgetown University



Dr. Rebecca Katz is a Professor and Director of the Center for Global Health Science and Security, and holds joint appointments in Georgetown University Medical Center and the School of Foreign Service. She teaches courses on global health diplomacy, global health security, and emerging infectious diseases in the Science, Technology and International Affairs, Security Studies, and Global Infectious Disease Programs. Prior to coming to Georgetown in 2016, she spent ten years at The George Washington University as faculty in the Milken Institute School of Public Health. Since 2007, much of her work has been on the domestic and global implementation of the International Health Regulations as well as global governance of public health emergencies. She has

authored over 100 peer reviewed manuscripts, and five books in addition to numerous op eds, blogs, white papers and book chapters.

From 2004 to 2019, Dr. Katz was a consultant to the Department of State, working on issues related to the Biological Weapons Convention, pandemic influenza and disease surveillance. She returned to the Department of State in January 2021 as a senior advisor on the global COVID-19 response and global health security

In 2019, Dr. Katz co-convened the first international scientific conference on global health security, bringing together over 900 participants from around the world to form a community of practice,

Dr. Katz received her undergraduate degree from Swarthmore College, an M.P.H. from Yale University, and a Ph.D. from Princeton University. She is a member of the Council on Foreign Relations.

Dr. Bruce Gellin, MD, MPH, Pandemic Prevention Institute, The Rockefeller Foundation



Bruce Gellin, MD, MPH, is the Chief of Global Public Health Strategy for The Rockefeller Foundation’s pandemic prevention institute. In this role, he advances the development and execution of the strategic vision for global public health and pandemic prevention work. He is a key member of the team building a pandemic prevention institute that aims to avert future pandemics by identifying and responding to the earliest alerts of a disease outbreak and stopping it in the first 100 days.

One of the world’s premier vaccine and infectious disease experts, Dr. Gellin brings extensive experience and expertise in global public health to his role at the Foundation. Previously, Dr. Gellin served as Warren Weaver Fellow at the Foundation from 1991-1992, working on several projects including the launch of the Children’s Vaccine Initiative to ensure children throughout the world are immunized. Throughout his distinguished career, he has held numerous positions leading and advising on global immunization, strategic policy development, and pandemic preparedness and response at national, multinational, non-governmental, and institutional organizations and entities.

He has led key federal vaccine initiatives, including developing the National Vaccine Plan at HHS, creating the HHS’s first pandemic influenza preparedness and response plan, and representing the U.S. government on the research and development focus of the Decade of Vaccines Collaboration. He continues to carry this work forward as a member of the National Academy of Science, Engineering and Medicine Consensus Study on Global Influenza Vaccination Coordination.

At a global level, he has consulted as a technical expert to Gavi, the Vaccine Alliance, and serves as a key advisor to the WHO on global immunization and vaccination. His work with the WHO includes advising on influenza vaccines and vaccine hesitancy issues, chairing the WHO’s Global Action Plan for Influenza Vaccines Advisory Group, and

serving as a member of both the WHO Expert Advisory Group on SAGE Evaluation and the WHO Working Group on Influenza Preparedness and Response.

Dr. Gellin has spent decades driving forward critical work to protect the lives of millions across the country and globe from the threat of infectious diseases through effective, equitable vaccination and immunization strategies. Most recently, he served as the inaugural President of Global Immunization at the Sabin Vaccine Institute and is currently a member of the COVAX Independent Allocation of Vaccines Group.



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Deutsches Institut für Entwicklungspolitik gGmbH
Tulpenfeld 6
D-53113 Bonn

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