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**MOVING PAST  
COVID-19**

Lessons Learned from  
Responses around the World

Syndemics Webinar

March 17, 2021  
11:00 AM - 1:00 PM ET

*The National  
Academies of*  
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**Organized by the**

**Forum on Microbial Threats**

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MOVING PAST COVID-19: LESSONS LEARNED FROM RESPONSES  
AROUND THE WORLD – SYNDEMICS WEBINAR

*A VIRTUAL WORKSHOP*

March 17, 2021

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**HEALTH AND MEDICINE DIVISION  
BOARD ON GLOBAL HEALTH**

## **THE FORUM ON MICROBIALTHREATS**

**---- An Overview ----**



### **ABOUT THE FORUM**

The Forum on Microbial Threats of the National Academies of Sciences, Engineering, and Medicine (National Academies) was created in 1996 at the request of the Centers for Disease Control and Prevention and the National Institutes of Health to provide a structured opportunity for discussion and scrutiny of critical, and possibly contentious, scientific and policy issues related to research on and the prevention, detection, surveillance, and responses to emerging and reemerging infectious diseases in humans, plants and animals as well as the microbiome in health and disease. The Forum brings together leaders from government agencies, industry, academia, and nonprofit and philanthropic organizations to facilitate cross-sector dialogue and collaboration through public debate and private consultation to stimulate original thinking about the most pressing issues across the spectrum of microbial threats.

Despite decades of progress, the need for the Forum on Microbial Threats remains. Problems such as MERS, Ebola, Chikungunya, Zika, yellow fever, and antibiotic resistance demonstrate how the issue of emerging infections is global and unrelenting. The drivers are ever more pervasive, and the consequences—human, social, and economic—loom larger than ever.

The Forum convenes several times each year to identify and discuss key problems and strategies in the area of microbial threats. To supplement the perspectives and expertise of its members, the Forum also holds public workshops to engage a wide range of experts, members of the public, and the policy community. All workshops are summarized in high quality scholarly workshop proceedings that are available for free download from the National Academies Press.

The Forum on Microbial Threats is part of the National Academies' Board on Global Health. For more information about the Forum, please visit our website: [www.nationalacademies.org/microbialthreats](http://www.nationalacademies.org/microbialthreats).

## SPONSORS

Financial support for the Forum is derived from the following government agencies, industries, and nonprofit and philanthropic associations:

- Biomedical Advanced Research and Development Authority
- U.S. Agency for International Development
- U.S. Centers for Disease Control and Prevention
- U.S. Department of Homeland Security
- U.S. Department of Veterans Affairs
- U.S. Food and Drug Administration
- U.S. National Institute of Allergy and Infectious Diseases
- Uniformed Services University of the Health Sciences
- American Society of Tropical Medicine and Hygiene
- Burroughs Wellcome Fund
- EcoHealth Alliance
- Infectious Diseases Society of America
- Johnson & Johnson
- Merck & Co., Inc.
- New Venture Fund
- Sanofi Pasteur

*The Forum greatly appreciates our sponsors that make intellectual and financial contributions to the Forum's work.*

## HIGHLIGHTS OF RECENT WORKSHOP PROCEEDINGS

- Vaccine Access and Hesitancy: Part One of a Workshop Series: Proceedings of a Workshop—in Brief (2020)
- Exploring the Frontiers of Innovation to Tackle Microbial Threats: Proceedings of a Workshop (2020)
- The Convergence of Infectious Diseases and Noncommunicable Diseases: Proceedings of a Workshop (2019)
- Exploring Lessons Learned from a Century of Outbreaks: Readiness for 2030: Proceedings of a Workshop (2019)
- Understanding the Economics of Microbial Threats: Proceedings of a Workshop (2018)
- Urbanization and Slums: Infectious Diseases in the Built Environment: Proceedings of a Workshop (2018)
- Combating Antimicrobial Resistance: A One Health Approach to a Global Threat: Proceedings of a Workshop (2017)
- Building Communication Capacity to Counter Infectious Disease Threats: Proceedings of a Workshop (2017)
- Big Data and Analytics for Infectious Disease Research, Operations, and Policy: Proceedings of a Workshop (2016)
- The Ebola Epidemic in West Africa: Proceedings of a Workshop (2016)

## FORUM'S ACTION COLLABORATIVE – ONE HEALTH

The Forum's One Health Action Collaborative (OHAC), led by Gail Hansen, D.V.M., is an ad hoc activity that engages a community of participants who are interested in contributing to ongoing exploration and information sharing related to One Health topics. OHAC is committed to accelerating the implementation of a One Health approach in the field to counter microbial threats. Members include a subset of Forum members and a diverse range of external stakeholders from multiple sectors and disciplines such as public health, animal health, plant pathology, agriculture, environment, biotechnology, and others. Drawing from the dynamic discussions over regular conference calls, OHAC advises on One Health efforts that are internal and external to the National Academies, through the publication of papers and the hosting of seminars. For more info, [click here](#).

## FORUM MEMBERSHIP

Membership in the Forum includes a diverse range of stakeholders from multiple sectors.

**Peter Daszak, Ph.D. (Chair)**

EcoHealth Alliance

**Kent E. Kester, M.D. (Vice Chair)**

Sanofi Pasteur

**Rima F. Khabbaz, M.D. (Vice Chair)**

U.S. Centers for Disease Control and Prevention

**Kevin Anderson, Ph.D.**

U.S. Department of Homeland Security

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**Eva Harris, Ph.D.**

University of California, Berkeley

**Elizabeth D. Hermsen, Pharm.D., M.B.A.**

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**Chandy C. John, M.D., M.S.**

American Society of Tropical Medicine and Hygiene

**Michael Mair, M.P.H.**

U.S. Food and Drug Administration

**Jonna A. K. Mazet, D.V.M., M.P.V.M., Ph.D.**

University of California, Davis

**Victoria McGovern, Ph.D.**

Burroughs Wellcome Fund

**Sally A. Miller, Ph.D.**

The Ohio State University

**Suerie Moon, Ph.D., M.P.A.**

The Graduate Institute, Geneva

**Rafael Obregon, Ph.D., M.A.**

United Nations Children's Fund

**Kumanan Rasanathan, M.B.Ch.B., M.P.H.**

Health Systems Global

**Gary A. Roselle, M.D.**

U.S. Department of Veterans Affairs

**Peter A. Sands, M.P.A.**

The Global Fund to Fight AIDS,  
Tuberculosis & Malaria

**Thomas W. Scott, Ph.D.**

University of California, Davis

**Alan Tennenberg, M.D., M.P.H.**

Johnson & Johnson

**Matthew Zahn, M.D.**

Orange County Health Care Agency

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**Moving Past COVID-19 – Lessons Learned from Responses around the World**

***Virtual Workshop Series – Part 1***

**March 17, 2021**

**AGENDA**

Objectives:

This virtual workshop series will broadly examine the response to COVID-19 in the US and abroad. Online events (one on March 17, 2021 and one in summer 2021) will feature prospective discussions on the broad impacts of the pandemic on human health and global development; successes and missed opportunities; and key considerations that can be incorporated by the government, public health systems, private sector, and communities to enhance resilience and preparedness for future outbreaks.

Specifically, the workshops will feature invited presentations, panel discussions and breakout rooms. Topics include:

- The multifactorial nature of COVID-19 as a syndemic, including its amplification of existing health threats and the social determinants of health that impact disease outcomes in different communities (March 2021 webinar)
- The need for a nuanced, transdisciplinary approach to future emergent diseases, incorporating best practices learned from the COVID-19 experience around the world
- Collaboration, communication, and mutual reinforcement between government, public health, private sector, community, and scientific leadership
- The anticipated long-term impacts of emergent pandemics like COVID-19 on human health as an outcome of social behaviors, as well as public trust in authority and the public healthcare system, in the context of additional effects on private sector growth and economic development trajectories
- Impact and management of misinformation on public trust and improvement in social messaging to enhance uptake of evidence-based guidance
- Case-study analysis of various geographic, social and epidemiological data patterns around the world. For example: case-load curves, morbidity and mortality, public opinion polls, and behavioral indicators of public health.
- Higher-level takeaways from the COVID-19 experience that will inform decision makers on future risk management; balancing social, economic and public health considerations in a time of crisis; and improving communication and confidence in public leadership.

Speakers and discussants will contribute perspectives from government, academia, private and nonprofit sectors. Community voices from the US and abroad will also be represented. The global distribution of contributors to these workshops will reflect the global nature of the topics being addressed.

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**FIRST EVENT – WEDNESDAY, 17 March 2021**  
**11:00 am – 1:00pm ET**

**Session I: The Syndemic Nature of COVID-19**

Session I objectives:

- Explain in detail what syndemics are and what biological considerations and social determinants of health are involved in identifying and describing them
- Explore the reasons for and implications of denominating COVID-19 as a syndemic in particular geographic and community contexts
- Discuss why thinking about COVID-19 and other disease outbreaks through a syndemic lens is important for public health officials and the public at large
- Set the stage for the summer event by outlining long-term, cross-sectoral, global impacts of COVID-19 that can be anticipated by thinking about the pandemic through a syndemic lens – responses to which will be explored and evaluated later this year.

**Welcome and Introduction**

*Planning Committee Co-Chairs*

ELIZABETH HERMSEN

*Head, Global Antimicrobial Stewardship and Health Equity in Infectious Diseases  
Merck & Co.*

RAFAEL OBREGÓN

*United Nations Children's Fund (UNICEF)*

11:00 AM  
[10 min]

*Session Chair and Moderator*

LAURA HELMUTH

*Editor-in-Chief  
Scientific American*

- Overview of the webinar and its role in the greater workshop series – topic statement and problem statement. Tie this event into the Forum's greater goals.
- Set the stage for presentations and discussions – brief description of syndemics
- Introduce Emily Mendenhall (keynote speaker)

**Topic Presentation**

EMILY MENDENHALL

*Provost's Distinguished Associate Professor in Science, Technology and International Affairs  
Georgetown University*

11:10 AM  
[20 min]

- Provide a detailed description of how public health officials and the public at large ought to understand a syndemic and its sociobiological conditions

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|                      |   |
|----------------------|---|
|                      | <ul style="list-style-type: none"> <li>• Discuss the importance of using the syndemic lens to understand disease outbreaks and responses to them</li> <li>• Explain the syndemic nature of COVID-19, highlighting the importance of setting in such a designation, and what that means for recovery efforts</li> </ul>  |
| 11:30 AM<br>[40 min] | <p><b>Panel Discussion</b></p> <p>LAURA HELMUTH, <i>Moderator</i></p> <p>EMILY MENDENHALL, <i>Panelist</i><br/><i>Associate Professor, Georgetown University</i></p> <p>JEFFREY DUCHIN, <i>Panelist</i><br/><i>Health Officer, Seattle &amp; King County Public Health</i></p> <p>CHIKWE IHEKWEAZU, <i>Panelist</i><br/><i>Director General, Nigeria Centre for Disease Control</i></p> <ul style="list-style-type: none"> <li>• Outline what we might learn, from looking at COVID-19 through the lens of a syndemic, about the long-term consequences that are likely to surface across society and around the world – settling on specific considerations for future analysis</li> <li>• Evaluate the practical implications and applicability of using the syndemic lens, based on lived experience of public health leadership on the ground during COVID-19</li> <li>• Discuss key actions and topics for deeper investigation when planning for long-term, resilient recovery from COVID-19</li> </ul> |
| 12:10 PM<br>[40 min] | <p><b>Q&amp;A</b></p> <p>LAURA HELMUTH, <i>Moderator</i></p> <ul style="list-style-type: none"> <li>• Questions will be asked of all panelists. Some questions will be prepared and others will be invited from members of the audience.</li> </ul>   |
| 12:50 PM<br>[10 min] | <p><b>Closing Thoughts</b></p> <p><i>Planning Committee Co-Chairs</i></p> <p>ELIZABETH HERMSEN<br/>RAFAEL OBREGÓN</p> <ul style="list-style-type: none"> <li>• Summary statement on key takeaways from the day’s conversations</li> <li>• Announcement about summer 2021 event(s) and outline of topics to be addressed</li> </ul>  |
| 1:00 PM              | <b>Adjourn</b>  |



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MOVING PAST COVID-19 – LESSONS LEARNED FROM RESPONSES AROUND THE WORLD

*A Virtual Workshop – Part 1*

**PLANNING COMMITTEE ROSTER**

**Elizabeth D. Hermsen, Pharm.D., M.B.A.**

*(Co-Chair)*

Member, Forum on Microbial Threats

Head, Global Antimicrobial Stewardship and Health Equity  
in Infectious Diseases

Merck & Co., Inc.

Elkhorn, NE

**Rafael Obregon, Ph.D., M.A.**

*(Co-Chair)*

Member, Forum on Microbial Threats

Chief, Communication for Development Section

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*Member, Forum on Microbial Threats*

Director, Ryan White Center for Pediatric Infectious  
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Indiana University School of Medicine

Indianapolis, IN

**Kent E. Kester, M.D.**

*Vice-Chair, Forum on Microbial Threats*

Vice President and Head

Translational Science and Biomarkers

Sanofi Pasteur

Swiftwater, PA

**Rima F. Khabbaz, M.D.**

*Vice-Chair, Forum on Microbial Threats*

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FAFPHM**

*Member, Forum on Microbial Threats*

Coordinator, Health Systems

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World Health Organization

Phnom Penh, Cambodia

**Stephen J. Thomas, M.D., FACP**

Chief, Division of Infectious Diseases

Director, Institute for Global Health and Translational  
Science

State University of New York Upstate Medical

University

Syracuse, NY

**Matthew Zahn, M.D.**

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## MOVING PAST COVID-19 – LESSONS LEARNED FROM RESPONSES AROUND THE WORLD

### *A Virtual Workshop – Part 1*

#### PLANNING COMMITTEE BIOGRAPHIES

**Elizabeth D. Hermsen, Pharm.D., M.B.A., BCPS-AQ(ID), FIDP, FIDSA (Co-Chair)**, is the Head of Global Antimicrobial Stewardship and Health Equity in Infectious Diseases at Merck & Co., Inc. and an Adjunct Associate Professor at the University of Nebraska Medical Center, Colleges of Pharmacy and Medicine, in Omaha, Nebraska. Dr. Hermsen received her Doctor of Pharmacy degree from the University of Nebraska Medical Center followed by a pharmacy practice residency at The Nebraska Medical Center, a fellowship in Infectious Diseases Research at the University of Minnesota, College of Pharmacy, and a master's degree in business administration at the University of Minnesota, Carlson School of Management. Following her fellowship, Dr. Hermsen developed and co-directed the antimicrobial stewardship program at The Nebraska Medical Center and subsequently joined Cubist, where she created and led the Antimicrobial Stewardship Outreach Group. Now, in her role at Merck, she is responsible for creating and executing a strategy to advance antimicrobial stewardship through education, implementation, research, and advocacy, with a global scope, across human, animal, and environmental health. Dr. Hermsen's role also focuses on health equity in infectious diseases, working across antimicrobials, virology, and vaccines. Dr. Hermsen actively contributed to the advancement of the Society of Infectious Diseases Pharmacists (SIDP) Antimicrobial Stewardship Certificate Program during her term as SIDP President and continues to participate as a lecturer in the program. Dr. Hermsen served as a contributing member of the Antimicrobial Stewardship Knowledge & Skills Collaborative, coordinated by the Society for Healthcare Epidemiology of America; an expert panel on Hospital-based Antimicrobial Utilization Surveillance via the National Healthcare Safety Network, coordinated by the Centers for Disease Control and Prevention; an expert panel coordinated by the National Quality Forum and CDC to develop the practical tool entitled, [Antibiotic Stewardship in Acute Care: A Practical Playbook](#); and co-chaired the Antimicrobial Stewardship Work Package (1A) for the Innovative Medicines Institute (IMI) Driving Reinvestment in Research & Development and Responsible Antibiotic Use ([DRIVE-AB](#)) initiative. Dr. Hermsen was selected to serve on the Infectious Diseases Society of America (IDSA) Leadership Development Committee, and she served as the inaugural Chair of the newly-created SIDP Strategic Planning Committee. Dr. Hermsen is a Board Certified Pharmacotherapy Specialist with added qualifications in Infectious Diseases and is a Fellow of SIDP and IDSA. She has contributed to the profession with numerous publications in peer-reviewed journals, book chapters, and by serving as a reviewer for several professional journals. Dr. Hermsen has also given over 100 invited presentations at state, regional, national, and international meetings, and she recently gave a [TED talk](#) regarding antimicrobial stewardship and resistance at TEDx Omaha 2019.

**Rafael Obregon, Ph.D., M.A. (Co-Chair)**, provides technical leadership and guidance on the development of standards, guidelines, and quality assurance for the application of communication for development principles and strategies across programmatic areas of the United Nations Children's Fund (UNICEF), including emergency response and humanitarian action. In this capacity, Dr. Obregon has engaged in several responses to public health emergencies and disease outbreaks, including the 2014 – 2015 West Africa Ebola Outbreak. In 2016 Dr. Obregon also served as a member of the Advisory Committee to the World Health Organization's (WHO's) International Health Regulations Emergency Committee on Zika virus and observed increase in neurological disorders and neonatal malformations. Prior to joining UNICEF, he has served as regional advisor for health communication within the Area of Family and Community Health and Child and Adolescent Health Unit at the Pan American Health Organization. Dr Obregon has also been a technical advisor, researcher, and resource/focal person for international/national cooperation agencies and government and nongovernmental organizations, particularly in health and development initiatives. His duties have focused on formative research, project design and evaluation, and capacity strengthening. Dr. Obregon has also been associate professor and guest faculty member at a number of universities, including Ohio University, the Universidad Autónoma in Barcelona, Spain, and the Universidad del Norte in Barranquilla, Colombia, where he remains as an adjunct faculty. Throughout his career, he has written several books, book chapters, monographs, manuals, peer-reviewed journal articles and reports on public health communication, participatory communication, and capacity development. He is a member of several editorial boards including the *Journal of Health Communication*, and has been a member of several scientific committees including the World Congress on

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Communication and Development, convened by the World Bank, the Food and Agriculture Organization of the United Nations, and the Communication Initiative, as well as a member of the Technical Advisory Group for the Global Health Communication Partnership within the Center for Communication Programs at Johns Hopkins University. Dr. Obregon earned his Ph.D. in an interdisciplinary program in mass communications, with a concentration on international health, at the College of Communications at Pennsylvania State University in 1999. He received his Master of Arts in international affairs and communication and development from Ohio University in 1994 with a minor in public health. Additionally, he obtained a diploma in education and pedagogy through the National Apprenticeship Service in Colombia in 1990.

**Chandy C. John, M.D., M.S.,** holds the Ryan White Endowed Chair in Pediatric Infectious Diseases and is director of the Ryan White Center for Pediatric Infectious Disease and Global Health at Indiana University. Dr. John's research focuses on malaria pathogenesis, immunology and epidemiology. Key discoveries of his collaborative research team include: 1) the first prospective studies to establish that severe malaria is associated with long-term cognitive impairment in children, 2) identification of immunologic factors that increase risk of severe malaria and cognitive impairment after severe malaria; 3) determination of geographic and immunologic factors that affect risk of malaria in areas of unstable malaria transmission; and 4) the first studies to show that hydroxyurea treatment is safe and effective for children with sickle cell anemia in malaria endemic areas. Dr. John conducts research and training programs in Kenya in collaboration with colleagues at the Kenya Medical Research Institute, and in Uganda in collaboration with colleagues at Makerere University. He is the author of more than 180 peer-reviewed publications and 30 book chapters. Dr. John serves on the Thrasher Research Fund Scientific Advisory Committee, and has served on or chaired numerous NIH and national and international study sections and review boards. Dr. John's awards include the Pediatric Infectious Diseases Society Young Investigator Award (2004), and the Bailey K. Ashford Medal from the American Society of Tropical Medicine and Hygiene for contributions to tropical medicine research (2011). Dr. John is an active clinician, specializing in pediatric infectious diseases, tropical medicine and travel medicine. As an educator, Dr. John was director of global health residency tracks in pediatrics at Case Western Reserve University and the University of Minnesota. Dr. John served as president of the American Society of Tropical Medicine and Hygiene in 2019.

**Kent E. Kester, M.D.,** is currently vice president and head of Translational Science and Biomarkers at Sanofi Pasteur. During a 24-year career in the U.S. Army, he worked extensively in clinical vaccine development and led multiple research platforms at the Walter Reed Army Institute of Research, the U.S. Department of Defense's largest and most diverse biomedical research laboratory—an institution he later led as its commander/director. His final military assignment was as the associate dean for clinical research in the School of Medicine at the Uniformed Services University of the Health Sciences (USUHS). Dr. Kester holds an undergraduate degree from Bucknell University and an M.D. from Jefferson Medical College. He completed his internship and residency in internal medicine at the University of Maryland and a fellowship in infectious diseases at the Walter Reed Army Medical Center. A malaria vaccine researcher with over 70 scientific manuscripts and book chapters, Dr. Kester has played a major role in the development of the malaria vaccine candidate known as RTS,S. Currently a member of the U.S. Government Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria, he previously chaired the Steering Committee of the National Institute of Allergy and Infectious Diseases (NIAID)-USUHS Infectious Disease Clinical Research Program, and has served as a member of the Food and Drug Administration's Vaccines and Related Biologics Products Advisory Committee, the NIAID Advisory Council, and the U.S. Centers for Disease Control's Office of Infectious Diseases Board of Scientific Counselors. Board certified in both internal medicine and infectious diseases, he holds faculty appointments at USUHS and the University of Maryland; and is a fellow of the American College of Physicians, the Infectious Diseases Society of America, and the American Society of Tropical Medicine and Hygiene.

**Rima F. Khabbaz, M.D.,** is the director of the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) at the U.S. Centers for Disease Control and Prevention (CDC). From 2010 to 2017, she was CDC's deputy director for infectious diseases and director of the Office of Infectious Diseases, where she helped lead the efforts of CDC's infectious disease national centers and advance the Agency's crosscutting infectious disease priorities including the integration of advanced molecular detection technologies into public health. During that time, she also served on an interim basis as acting director of the National Center for Immunization and Respiratory Diseases, acting director of the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, and acting director of NCEZID during leadership transitions. Her

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previous CDC positions include director of the National Center for Preparedness, Detection, and Control of Infectious Diseases; director, acting director, and associate director for epidemiologic science in the National Center for Infectious Diseases (NCID); and deputy director and associate director for science in the Division of Viral and Rickettsial Diseases. Her first job at CDC was an Epidemic Intelligence Service Officer in NCID's Hospital Infections Program. She later served as a medical epidemiologist in NCID's Retrovirus Diseases Branch, where she made major contributions to defining the epidemiology of the non-HIV retroviruses, specifically human T lymphotropic viruses (HTLV) I and II, in the United States and to developing guidance for counseling HTLV-infected persons. Following the hantavirus pulmonary syndrome outbreak in the southwestern United States in 1993, she led CDC's efforts to set up national surveillance for this syndrome. She also played a key role in developing and coordinating CDC's blood safety and food safety programs related to viral diseases. She has served in leadership positions during many of CDC's responses to outbreaks of new and/or reemerging infections, including Nipah, Ebola, West Nile virus, SARS, and monkeypox, and she led the CDC field team to the nation's capital during the public health response to the anthrax attacks of 2001. Dr. Khabbaz is a graduate of the American University of Beirut in Lebanon, where she obtained both her bachelor's degree in science (biology/chemistry) and her medical doctorate degree. She trained in internal medicine and completed a fellowship in infectious diseases at the University of Maryland in Baltimore. In addition to her CDC position, she serves as clinical adjunct professor of medicine (infectious diseases) at Emory University. Dr. Khabbaz is a fellow of the Infectious Diseases Society of America (IDSA), a member of the American Epidemiological Society, and a member of the American Society for Microbiology and of the American Society for Tropical Medicine and Hygiene. She is a graduate of the Public Health Leadership Institute at the University of North Carolina and the National Preparedness Leadership Initiative at Harvard University. She served on IDSA's Annual Meeting Scientific Program Committee and serves on the society's Public Health Committee. She also is a member of the National Academies of Sciences, Engineering, and Medicine's Forum on Microbial Threats.

**Kumanan Rasanathan, M.B.Ch.B., M.P.H.,** is a public health physician with 20 years of experience in health and related sectors. He is a member of the board of Health Systems Global and currently works in the areas of health systems and maternal and child health in Cambodia. He was previously chief, Implementation Research Unit and Delivery Science Unit and Senior Adviser Health for United Nations Children's Fund in New York, working on implementation research focused on improving child service delivery, universal health coverage, district health system strengthening, health systems resilience post-Ebola, integrated community case management, the Sustainable Development Goals agenda, and multisectoral approaches to child health. Prior to this, Dr. Rasanathan worked for the World Health Organization in Geneva on primary health care and the social determinants of health, and in a number of different countries as a clinician, researcher, policy maker, program manager, and advocate. He started his public health career running Phase I and II vaccine clinical trials leading to the licensure and rollout of meningococcal B vaccine in New Zealand.

**Stephen J. Thomas, M.D.,** is a virologist and vaccinologist who currently serves as a Professor of Medicine, Microbiology & Immunology and an Infectious Diseases physician-scientist at SUNY Upstate Medical University in Syracuse, NY. He is the Chief of the Division of Infectious Diseases and the Director of the Institute for Global Health and Translational Science. As Director of the Institute of Global Health and Translational Science, he provides leadership to multiple initiatives in the US and abroad. Dr. Thomas earned his Bachelor of Arts with Honors in Biomedical Ethics from Brown University, his Medical Degree from the Albany Medical College, and completed his internship and residency in Internal Medicine/Infectious Diseases at the Walter Reed Army Medical Center. Dr. Thomas is board certified in both Infectious Disease and Internal Medicine, holds a certification in Tropical Medicine and Traveler's Health from the American Society of Tropical Medicine and Hygiene, and is a Fellow in the American College of Physicians, Infectious Diseases Society of America, and the American Society of Tropical Medicine and Hygiene. Dr. Thomas has spent more than 5 years of his early career living and working in Thailand and Southeast Asia. He played a key leadership role during the West Africa Ebola outbreak, advising senior Department of Defense leadership and leading his team in planning and executing of Ebola vaccine trials. He was instrumental in developing and implementing his institution's first in-human MERS-CoV vaccine trial and Zika vaccine. Prior to joining SUNY Upstate, Dr. Thomas spent twenty years in the U.S. Army Medical Corps, serving at the Walter Reed Army Institute of Research, finishing his time there as the Chief Operating Officer of the Institute. As Chief of Infectious Disease at SUNY, Dr. Thomas leads the Infectious Diseases Division and is responsible for providing in- and out-patient consultation for more than 10% of New York State's population. As Director of the Institute of Global Health and Translational Science, he leads multiple initiatives encompassing education, research, and clinical service opportunities. His current research activities include work on dengue human infection models, development of vaccines

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against opioid use disorders, field-based studies exploring transmission and pathogenesis of arboviral diseases in Asia and Latin America, and both early and advanced phase testing of a number of vaccines and therapeutics against tropical diseases.

**Matthew Zahn, M.D.**, currently serves as medical director of the Division of Epidemiology and Assessment for the Orange County Health Care Agency. Dr. Zahn received his doctorate in medicine from St. Louis University School of Medicine. From 2004 through 2011, he served as medical director for the Louisville Metro Department of Public Health and Wellness. During that time, he also served as an assistant professor of pediatric infectious disease at the University of Louisville School of Medicine. Dr. Zahn has served on multiple national public health committees, including his current service as the chair of the Infectious Diseases Society of America's Public Health Workgroup.

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## SYSTEMATIZING THE ONE HEALTH APPROACH IN PREPAREDNESS AND RESPONSE EFFORTS FOR INFECTIOUS DISEASE OUTBREAKS

### *A Virtual Workshop – Part I*

#### SPEAKER BIOGRAPHIES

**Jeffrey Duchin, M.D.**, is the Health Officer and the Chief of the Communicable Disease Epidemiology & Immunization Section for Public Health–Seattle & King County, Professor of Medicine in the Division of Infectious Diseases, and Adjunct Professor in the School of Public Health at the University of Washington, Seattle. Jeff currently serves on the Centers for Disease Control & Prevention’s (CDC) Board of Scientific Counselors (Office of Infectious Diseases), the CDC’s Advisory Committee on Immunization Practices and the Board of Directors for the Infectious Disease Society of America. Jeff has previously been a member of the National Academy of Medicine’s (NAM) Forum on Microbial Threats and Forum on Medical and Public Health Preparedness, and the National Quality Forum’s Adult Immunization Committee. Jeff received his medical degree from Rutgers Medical School and trained in internal medicine at Thomas Jefferson University Hospital, completed a fellowship in general internal medicine and emergency medicine at the Hospital of the University of Pennsylvania, and did his infectious disease subspecialty training at the University of Washington in Seattle. Jeff is a graduate of the CDC’s Epidemic Intelligence Service (EIS) Officer training where he was assigned to the National Center for Infectious Diseases where he also completed the CDC’s Preventive Medicine Residency program. Jeff worked for CDC as a medical epidemiologist in the Divisions of Tuberculosis Elimination and HIV/AIDS Special Studies Branch before assuming his current position. His peer review publications and research interests focus on communicable diseases of public health significance. For a complete listing of publications, please see PubMed.

**Laura Helmuth, Ph.D.**, is the editor in chief of *Scientific American* and a member of the National Academies’ Standing Committee on Advancing Science Communication. She has been an editor for the *Washington Post*, *National Geographic*, *Slate*, *Smithsonian*, and *Science* magazines. She is a former president of the National Association of Science Writers and is a current advisory board member for the American Association for the Advancement of Science’s SciLine science communication project, *High Country News*, and the Simons Foundation’s *Spectrum* autism news magazine. She has a Ph.D. in cognitive neuroscience from the University of California, Berkeley and attended the U.C Santa Cruz science communication program. She is active on Twitter at @laurahelmuth.

**Chikwe Ihekweazu, M.D., M.P.H.**, is the Director General of the Nigeria Centre for Disease Control (NCDC) and was until January 2018, the Acting Director of the Regional Centre for Disease Control for West Africa. Dr Ihekweazu trained as an infectious disease epidemiologist and has over 20 years’ experience working in senior public health and leadership positions in several National Public Health Institutes, including the South African National Institute for Communicable Diseases (NICD), the UK’s Health Protection Agency, and Germany’s Robert Koch Institute (RKI). Dr Ihekweazu has led several short- term engagements for WHO, mainly in response to major infectious disease outbreaks around the world including the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19).

**Emily Mendenhall, Ph.D., M.P.H.**, is a medical anthropologist and Provost’s Distinguished Associate Professor at the Edmund A. Walsh School of Foreign Service at Georgetown University. She is the author of *Rethinking Diabetes: Entanglements with Trauma, Poverty, and HIV* (2019, Cornell) and *Syndemic Suffering: Social Distress, Depression, and Diabetes among Mexican Immigrant Women* (2012, Routledge). She has written four dozen articles at the boundaries of anthropology, psychology, medicine, and public health and led a Series of articles on Syndemics in *The Lancet*. In 2017, Dr. Mendenhall was awarded the George Foster Award for Practicing Medical Anthropology by the Society for Medical Anthropology.

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**SUGGESTED BACKGROUND READING**

**Editorial comment from Richard Horton, editor-in-chief of *The Lancet*, on the syndemic nature of COVID-19 (1 page):**

- Horton, R. 2020. “Offline: COVID-19 is not a pandemic.” *The Lancet*, 396(10255): 874. DOI: [https://doi.org/10.1016/S0140-6736\(20\)32000-6](https://doi.org/10.1016/S0140-6736(20)32000-6).

**Comment by Emily Mendenhall in response to the above editorial (1 page):**

- Mendenhall, E. 2020. “The COVID-19 syndemic is not global: context matters.” *The Lancet*, 396(10264): 1731. DOI: [https://doi.org/10.1016/S0140-6736\(20\)32218-2](https://doi.org/10.1016/S0140-6736(20)32218-2).

**Background explanation of the syndemic model from *The Lancet*’s series in 2017 (8 pages):**

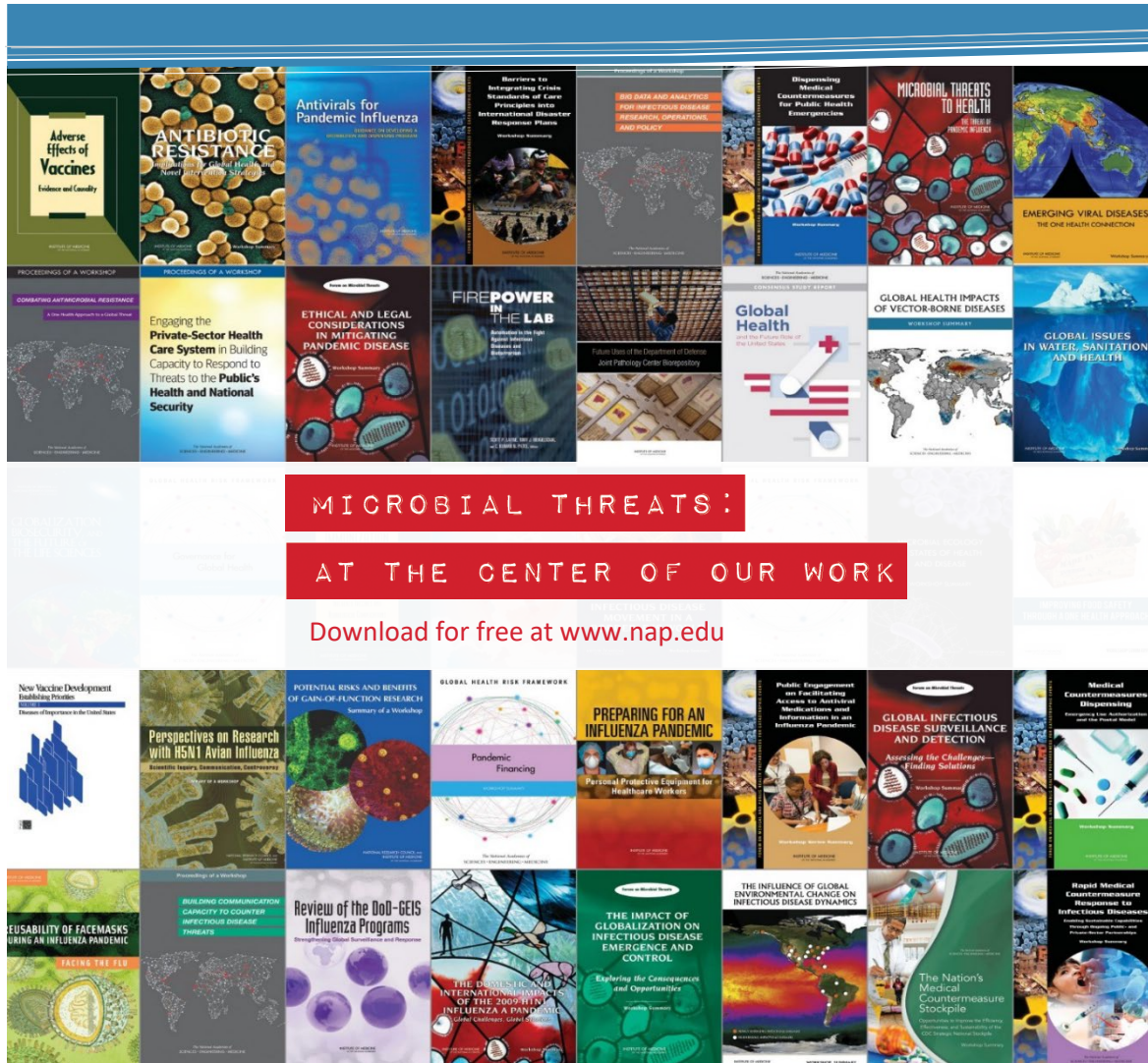
- Singer, M., N. Bulled, B. Ostrach, E. Mendenhall. 2017. “Syndemics and the biosocial conception of health.” *The Lancet*, 389(10072): 941-950. DOI: [https://doi.org/10.1016/S0140-6736\(17\)30003-X](https://doi.org/10.1016/S0140-6736(17)30003-X).



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