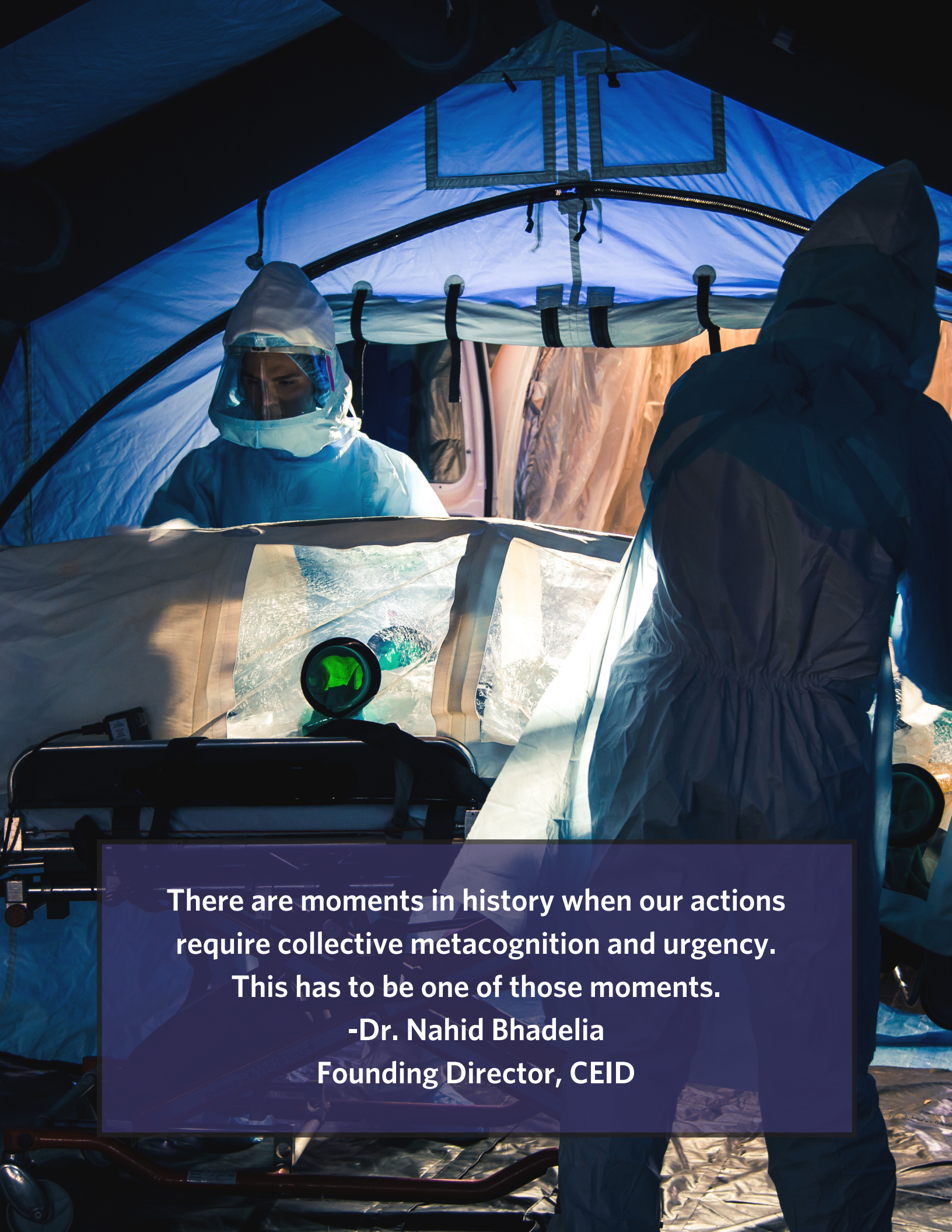


**BOSTON  
UNIVERSITY**

**Boston University** Center for Emerging Infectious Diseases  
Policy & Research



**ANNUAL REPORT 2022**  
*Growing Resilience Against Epidemics*



**There are moments in history when our actions  
require collective metacognition and urgency.  
This has to be one of those moments.**

**-Dr. Nahid Bhadelia  
Founding Director, CEID**



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# LETTER FROM OUR DIRECTOR

July 1, 2022

Dear CEID Community,

It is our utmost pleasure to share with you the updates from the inaugural year of the BU Center for Emerging Infectious Diseases Policy and Research (CEID). CEID's mission is to build societal resilience against the threat of emerging pathogens through multidisciplinary research, capacity strengthening, training and public outreach.

We founded CEID a year ago with a vision that to address the growing threat of emerging pathogens, we need multidisciplinary research & to approach pandemic preparedness from the bottom up, rooted in our communities globally. Our goal is to create a pandemic preparedness initiative that focused on the operational & technical aspects of global health security and to link policy to ground truth. Epidemics break societies along known fault lines. Ensuring that we provide protection for all our communities is a critical component of resilience. Hence, one of the driving forces of the center is rooted in the key value at the center of all things at BU: equity.

Over the last year, we've been working to bring this vision to life. CEID has grown into a multidisciplinary research organization, with a team of three staff, over 30 faculty, and a growing community of partners. We've supported eight student researchers, hosted numerous public events, briefed policy makers on pandemic preparedness, provided recommendations for federal legislation, awarded pilot grants, and established five core research areas that will help us build resilience against emerging infectious diseases on a national and global scale.



Our investigators have also been awarded over \$3 million in external funding in Center-related research. We have engaged in national and international media, sharing expertise on wide ranging topics related to infectious diseases, and engaged with communities around Massachusetts and around the world.

New and reemerging threats (such as the current monkeypox outbreaks) continue to challenge our recovery, highlighting the importance of multidisciplinary centers like CEID to move the science forward, mobilize the response, and improve public health communications.

I am immensely proud of all we've accomplished so far and extremely grateful for our faculty, staff, and you: the CEID community. I look forward to seeing all that we will continue to accomplish together in year two.

Sincerely,

**Nahid Bhadelia, MD, MALD**

Founding Director  
BU Center for Emerging Infectious Diseases  
Policy and Research (CEID)

# OVERVIEW OF CEID

## **Mission**

Boston University's Center for Emerging Infectious Diseases Policy & Research (CEID, pronounced like "seed") was established in June 2021. Our core mission is to improve societal resilience against the threat of emerging & epidemic infectious diseases worldwide through transdisciplinary research, global and local capacity strengthening, training, evidence generation for policy support, and community engagement. We're carving out the scientific, educational, policy, and cultural space to investigate underlying challenges to pandemic preparedness and discover innovative solutions.

Our work allows us to provide recommendations to communities, governments, and the academic groups aimed at preparing and responding to pandemics at the national and global level.

## **Method**

We approach our work with **GRIT**

Just as the root causes that give rise to pandemics are multifactored, our efforts to combat them must be multidisciplinary. That's why we've centered our work around four pillars which we refer to as "GRIT":

- **Governance**
- **Resilience**
- **Innovation**
- **Trust**



## **GOVERNANCE**

We examine the impact of local, national, and international policies, and how these help and hinder global responses to new infectious disease threats. Simultaneously, we work to find novel ways to connect stakeholders with legislators in real time to provide scientific knowledge, policy recommendations and impact assessments for a variety of legislation.

## **RESILIENCE**

Our researchers center their work around keeping our communities safer and better preparing our healthcare systems. We believe resilience against novel infectious diseases requires engagement of a wide range of partners from both of these settings. Outbreaks fracture us along known fault lines. Hence, we believe achieving health equity is an essential requirement for global health security.

## **INNOVATION**

We believe investment in new biomedical, technical and social innovations can significantly impact the discovery of emerging pathogens and enhance our response. We examine the societal and policy impact of new research; study challenges of deploying new diagnostics, vaccines, and treatments; and identify best practices for evaluating efficacy of new interventions during public health emergencies. Our researchers also evaluate social innovation strategies in response to emerging and reemerging infectious diseases, and work to identify novel surveillance strategies.

## **TRUST**

Building trust between scientists, governments, public health organizations and affected communities is a cornerstone of responsible pandemic preparedness and response. Misinformation and disinformation sow confusion, lead to detrimental effects on individual health, and delay the end of public health emergencies. We examine the evolution of the role of misinformation and disinformation during infectious diseases emergencies, and their public health impact. Our research focuses on identifying evidenced- based strategies for dispelling misinformation and combatting disinformation. We're examining the role of social media platforms and misinformation, addressing vaccine hesitancy and cyber information exchange networks, exploring the role of geopolitics in the use of disinformation, identifying best practices for communication of scientific uncertainty, and reimagining media and public health interactions during outbreaks.

## Our First Year At A Glance

**37**

Faculty

**>\$3M**

Funding

**3**

Staff

**449**

Faculty Media  
Appearances

**1,344**

Twitter  
Followers

**8**

Student  
Researchers

**120**

Faculty  
Publications

\*related to emerging infectious  
diseases

**>2K**

Event  
Attendees

\*based on in person &  
virtual attendance

**5**

Core  
Research  
Areas

## Leadership & Staff

As a University-wide research center, CEID reports to BU's Office of Research. Under the leadership of Founding Director Dr. Nahid Bhadelia and Dr. Gloria Waters, Vice President and Associate Provost for Research at BU, the Center has hired and onboarded a full time staff of three. Together, our core team has worked tirelessly to develop CEID's overall research, finance, and communications strategies.



**NAHID BHADELIA, MD,  
MALD**  
FOUNDING DIRECTOR



**GLORIA WATERS, PHD**  
VICE PRESIDENT & ASSOCIATE  
PROVOST FOR RESEARCH, BU



**ERICA AUGUSTINE**  
MANAGER, MARKETING &  
COMMUNICATIONS



**CAITRYN MCCALLUM, MPH**  
DIRECTOR, RESEARCH &  
PARTNERSHIPS



**MARIE VEARLING**  
ASSOCIATE DIRECTOR, FINANCE  
& ADMINISTRATION



# RESEARCH

## Focus Areas

### Ethics & Biocontainment

Care of patients with highly communicable diseases poses unique challenges for healthcare workers, public health institutions and communities. This workstream is interested in the ethical frameworks of biocontainment care units (BCUs), which are designed to care for patients with novel infectious diseases in resource-rich and resource-limited settings. A multidisciplinary team of researchers from the fields of infectious diseases, medicine, public health, health policy, and law and ethics works to operationalize best practices and create resources and manuals for healthcare institutions to conduct rapid ethical review of situations occurring in biocontainment care.

### A Community-Based Approach to Pandemic Preparedness and Response

CEID researchers are investigating how different communities access information and resources during public health crises. Our aim is to improve community resilience through engaging local leaders, bridging gaps between traditional health systems and community partners, and addressing the unique needs of the structurally marginalized in our communities.

### Fostering Scientific Collaboration and Capacity Strengthening

Our researchers seek to understand the role that maximum- and high-containment research laboratories play in pandemic preparedness. Our team aims to strengthen collaboration among key players in forging the path towards a faster and more equitable global scientific response by identifying key programmatic and policy interventions in this space.

### Public Health Communications During Emerging Infectious Disease Outbreaks

The COVID-19 pandemic has underscored the need for rapid public health literacy. CEID promotes evidence- and science-based public health communication as a core method of improving infectious disease preparedness and recovery. Our goals include combatting mis- and dis-information and identifying best practices to share information with the general public, policymakers, and other key stakeholders during fast-moving infectious diseases crises.

### Novel Challenges in Emerging Infectious Disease Surveillance

Our faculty advances surveillance methods to counter emerging infectious disease threats. Our team leverages novel methods to track excess mortality, and uses predictive models for ecological forecasting, pandemic prevention and mitigation, and more.



## Research We're Doing

### Predicting and Preventing Epidemic to Pandemic Transitions (NSF)

The Predicting and Preventing Epidemic to Pandemic Transitions study, funded by the National Science Foundation (NSF), seeks to develop a rich model that predicts both disease emergence and potential for significant spread, and formulate pandemic prevention strategies. CEID Founding Director Dr. Nahid Bhadelia is Co-Principal Investigator and Co-Investigators include CEID Core Faculty Drs. John Connor, Michael Dietze, Traci Hong, Gerald Keusch, Nina Mazar, Andrew Stokes, Gianluca Stringhini, Laura White, and Kevin Gallagher. Additional Co-PIs include Drs. Yannis Paschalidis, Eric Kolaczyk, and Diane Joseph-McCarthy of Boston University, as well as Dr. Jon Epstein of EcoHealth Alliance.

This project aims to evaluate factors that impact disease emergence and spread by incorporating input from multidisciplinary fields that span biology, ecology, epidemiology, medicine, computer & information science & engineering, and social sciences. The detailed knowledge base gathered from this work aims to generate novel predictive models, provide insight to strengthen current models, and formulate rapid pandemic mitigation strategies.

### RECOVER Long COVID Study (NIH)

The Researching COVID to Enhance Recovery (RECOVER) Study seeks to understand, treat, and prevent the long-term effects of COVID-19. The Boston Medical Center (BMC) study, led by Co-Principal Investigators Dr. Nahid Bhadelia and Dr. Jai Marathe (CEID Core Faculty and Director of the ReCOVer Long COVID Clinic at BMC) is part of a national cohort funded by the National Institutes of Health (NIH) with the goal of fully understanding the condition referred to as “post-acute sequelae of SARS-CoV-2 (PASC), or “long COVID.”

The Boston Medical Center study site is one of six Boston-area hospitals and health care systems - a consortium called the Boston COVID Recovery Cohort - that is part of this national cohort. This study seeks to enroll 100 patients and follow them for a period of four years. The team also joins a community engagement table of leaders across organizations and community health centers to increase patient engagement and enroll a diverse cohort of patients that reflects the Greater Boston community.

**“Patients with long COVID may present with a variety of different symptoms, and no two patients are the same. The important thing to note is that we are learning about long COVID along with our patients—and we are constantly evaluating our treatment recommendations to address the patients’ needs. For some, [symptoms] are mild, but can be debilitating for others.”**



**Jai Marathe, MD, MS**

CEID Core Faculty  
Principal Investigator, BMC RECOVER Study  
[in conversation with The Brink](#)



### **Special Pathogens Healthcare and Research Ethics (SPHeRE) Working Group**

This working group supports CEID's mission of addressing essential ethical dilemmas that arise from infectious diseases containment scenarios, as they present competing clinical and research obligations. This multidisciplinary team includes faculty from the BU Center for Health Law, Ethics & Human Rights and our partners at the University of Nebraska Medical Center and Global Health Security Center (with the largest biocontainment and quarantine facility in the country), University of Texas Southwestern, and Beth Israel Deaconess Medical Center.

Our team provides expertise in operating biocontainment care centers in resource-rich and resource-limited settings, participating in outbreak response, and evaluating legal and ethical aspects of public health policy. The team is working on a white paper that applies existing clinical, public health, and research frameworks to explore the ethical dimensions of biocontainment care. The white paper will also identify real-life ethical scenarios in biocontainment care to understand common challenges and solutions of biocontainment care and outbreak response.

### **Massachusetts Consortium on Pathogen Readiness (MassCPR)**

MassCPR, led by Harvard Medical School, was convened to respond to the COVID-19 public health crisis. Composed of Working Groups that focus on vaccines, variants, biospecimens, Post Acute Sequelae of SARS-CoV-2 infection (PASC) (including long COVID) and more, this consortium aims to address both the immediate and long-term implications of the crisis.

Dr. Bhadelia is a member of the MassCPR Steering Committee. Additionally, she is the co-lead of the PASC Working Group, along with Dr. Bruce Levy of Brigham and Women's Hospital. Dr. Bhadelia and Dr. Jennifer Snyder-Cappione of Boston University conduct translational research related to autoimmunity and PASC. CEID Core Faculty Dr. Linda Sprague-Martinez leads the Health Equity Core of the PASC Working Group. This work aims to stem the tide of COVID-19 and lay the groundwork for confronting future pandemics.

### **Scientific Priorities and Governance for Patient Samples During Outbreaks**

Together with the National Emerging Special Pathogen's Training and Education Center's Special Pathogens Research Network and National Emerging Infectious Diseases Laboratories (NEIDL), CEID is working to establish the governance and ethics principles as well as scientific priorities and infrastructure for a planned national biorepository of clinical samples from patients with highly communicable diseases. This biorepository is meant to accelerate research on emerging infections, and help identify diagnostics, vaccines and treatments.

## **Boston University and University of Liberia Emerging and Epidemic Virus Research (BULEEVR)**

This program, supported by the NIH Fogarty International Center, is a collaborative effort between Boston University, the University of Liberia, the Liberian Institute of Biomedical Research, the National Public Health Institute of Liberia (NPHIL), the University of Liberia's A.M. Dogliotti College of Medicine, as well as in country international partners to create a multi-disciplinary research training program with three primary aims:

- Increase interest in graduate-level training (PhDs) in basic, translational, and public health
- Increase the number of independent investigators and research leaders in Liberia
- Establish educational and scientific collaborations to assure research and training opportunities.

Several CEID Core Faculty serve as program mentors, and they are particularly proud of the six BULEEVR mentees who, in their spare time, have participated in individual mentorship meetings, worked on manuscripts and proposals, attended lab meetings, and more. Notably, two candidates have been accepted to the BU School of Public Health Epidemiology PhD program, and one has been accepted into the BU Clinical Research MS program. Faculty mentors are also working to assist mentees who have faced embassy and visa challenges.

CEID BULEEVR Mentors include Drs. Nahid Bhadelia, Mosoka Fallah, Andrew J. Henderson, Patricia Hibberd, and Laura F. White.



Clockwise: Drs. Nahid Bhadelia, Mosoka P. Fallah, Andrew J. Henderson, Patricia Hibberd, Laura F. White

## **Joint Mobile Emerging Disease Intervention Clinical Capability (JMEDICC)**

The JMEDICC program is a collaboration between US and Ugandan researchers aimed at providing a platform for clinical trials in filoviruses during an outbreak setting. The program is establishing a pilot demonstration of the capabilities at Fort Portal Regional Referral Hospital in Kabarole District. The work of this platform, operated by Henry Jackson Foundation and Makerere University, includes running an isolation unit, strengthening the hospital laboratories to provide services beyond traditional hospitals in Africa, training staff in advanced supportive care and scientific rigor, conducting clinical research on sepsis, and establishing mobile capabilities to conduct clinical research during an outbreak anywhere in the country. CEID provides technical expertise around infection control, healthcare worker training, care of viral hemorrhagic fever patients, and research capacity building.

## Research We've Funded

At CEID, we aim to facilitate research with a focus on multidisciplinary knowledge-sharing and training opportunities to improve societal resilience against emerging and epidemic infectious diseases threats worldwide. We aim to foster such rigorous research through our annual CEID Pilot Grant program. Through smaller seed funding grants we aim to “plant ceids” and develop novel research among BU faculty and students.

### **Pilot Grants**

#### **Social Media Analysis of Misinformation and Vaccine Hesitancy in Three Middle-Income Countries**

This research project is led by Dr. Traci Hong, Dr. Derry Wijaya, and Dr. Veronika J. Wirtz. Supporting CEID’s core pillar of trust, this research team – composed of eight undergraduate and postgraduate students – aims to develop a big data methodology to identify misinformation in the three foci middle income countries: Brazil, Indonesia, and Nigeria.

Using Twitter API and Brandwatch API, the research team has obtained over 14 million tweets posted between January 2020 - October 2021 with Boolean search terms specific to vaccine, and with geolocation tags by the three foci countries. Trained human coders determined tweets containing COVID-19 misinformation using predetermined categories of misinformation developed by the World Health Organization, as well as the sentiment of the tweet regarding vaccination.

The team has developed and validated an instrument to annotate 5,500 randomly selected tweets, serving as the basis of training data for developing a machine learning algorithm to detect misinformation in the data, and to identify overlapping misinformation themes across the three foci countries. The team’s initial work has also been submitted to a global health conference.

#### **Modeling Antimicrobial Resistance (AMR) Outbreaks in Wastewater**

This research is led by CEID faculty, Dr. Muhammad Zaman and Dr. David Hamer. In support of CEID’s core pillar of innovation, this study, in partnership with researchers in South Africa and Pakistan, seeks to understand the role of metals in wastewater in developing drug resistance in pathogenic bacteria. Using a combination of quantitative modeling, controlled flow experiments, and miniaturization of industrial wastewater, the research team is investigating how metals (in particular zinc and copper) contribute to resistance development against doxycycline. The team recognizes the importance of closing the gap between quantitative modeling and analysis as critical to fundamentally understanding the drivers of antimicrobial resistance and creating effective interventions to prevent outbreaks of multi-drug resistant pathogens.



## **Seed Projects**

### **Rapid Public Health Literacy During EID Outbreaks**

Supporting CEID's goal of best practices in public health literacy within the context of emerging infectious disease outbreaks, this research builds on the experience of the BU COVID Epidemiology Corps and is led by CEID Faculty, Dr. Jennifer Weuve and Dr. Ellie Murray and supported by BUSPH student, Maggie Burkhardt.

To-date, the team has reviewed literature pertinent to a framework for public health literacy during outbreaks (PHLiO). Because scholarship that directly defines PHLiO is currently lacking, the team is developing a framework for PHLiO by drawing on scholarship in health literacy, public health literacy, infectious diseases, and theories individuals and societies use to explain disease distribution. The team's MPH candidate, Maggie Burkhardt, will be delivering an oral presentation on this work at the annual meeting of the American Public Health Association in November 2022. The team is also currently working on a manuscript for publication.

***“We are still contending with earned mistrust of our communities of color, including our Black communities, towards the medical establishment, which is not just based on historical aspects of mistreatment and exclusion, but ongoing exclusion and systemic racism*”**

**Cassandra Pierre, MD, MPH, MSc**  
CEID Core Faculty & Project Awardee  
[told NBC Boston](#)

### **The Infection Prevention-Based After-Action Review of COVID-19: The Boston-area Black and Latinx Community Perspective (AABL) Study**

To support CEID's mission of improving community resilience, this project intends to carry out an After-Action Review among communities of color - those disproportionately affected by COVID-19 - to build resilience for future emerging infectious disease threats. The team includes Dr. Cassandra Pierre, Dr. Nina Mazar, Caitryn McCallum, and two BUSPH graduate researchers, Arianna Rahimian and DeYante Prince.

The team seeks to understand messaging and language by speaking with 'trusted messengers' (leaders of organizations in the Boston-area outside of the traditional healthcare setting) that had the greatest impact in effectively communicating infection prevention-related knowledge from pandemic onset, to today. To-date, the team has created a research survey for dissemination among these 'trusted messengers,' to learn more about how community leaders understand their constituents' knowledge of COVID-19 transmission and risk, adherence to protective measures and behavior, public messaging, vaccines, and therapeutics.

### **Mapping COVID-19 Excess Mortality**

This project supports our novel surveillance work and is led by CEID Faculty Dr. Andrew Stokes. It seeks to shine a light on the hidden death toll of COVID-19 and builds on Dr. Stokes' program of research, which focuses on mortality surveillance systems in improving pandemic preparedness and response measures in the US and globally.

# BUILDING OUR COMMUNITY

## Faculty Overview

We are proud of our faculty team that embodies the multidisciplinary nature of our work. Our outstanding Core Faculty stem from a wide range of schools and colleges at Boston University, including the Schools of Medicine, Public Health, Global Studies, Law, Business, Social Work, and the Colleges of Arts and Sciences, Communication and Engineering. Additionally, our dedicated Affiliate Faculty represent a range of national and international institutions.



“ *This initiative is timely and is perfectly aligned with the diverse strengths of Boston University. We should use the lessons from the ongoing COVID-19 pandemic—what did we do right? What did we do wrong? And how can we improve? The solutions can only come by melding considerations from diverse disciplines, including public health, political science, and economics, as well as research on the pathogens that cause these diseases, and implementing them locally and globally.* ”



**Ronald B. Corley, PhD**  
Chair, Department of Microbiology & Director, NEIDL  
[told BU Today regarding the launch of CEID](#)

## Core Faculty



**JOHN CONNOR, PHD**  
ASSOCIATE PROFESSOR,  
MICROBIOLOGY, MED



**ROBERT DAVEY, PHD**  
PROFESSOR,  
MICROBIOLOGY, MED



**MICHAEL DIETZE, PHD**  
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**DAVID HAMER, MD**  
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**ANDREW J. HENDERSON,  
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MICROBIOLOGY,  
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**PATRICIA HIBBERD MD,  
PHD**  
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GLOBAL HEALTH, SPH  
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**TRACI HONG MA, PHD**  
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**ADAM HUME, PHD**  
RESEARCH ASSISTANT  
PROFESSOR,  
MICROBIOLOGY, MED



## Core Faculty



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CLINICAL ASSISTANT  
PROFESSOR,  
GLOBAL HEALTH, SPH



**GERALD KEUSCH, MD**  
PROFESSOR,  
MEDICINE, MED &  
INTERNATIONAL  
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MEDICINE, MED



**NINA MAZAR, PHD**  
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**LISA MESSERSMITH, PHD**  
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GLOBAL HEALTH, SPH



**ELLIE MURRAY, SCD**  
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**KEVIN OUTTERSON,  
JD, LL.M.**  
PROFESSOR, LAW  
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**CASSANDRA PIERRE,  
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**LINDA SPRAGUE  
MARTINEZ, PHD**  
ASSOCIATE PROFESSOR,  
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## Core Faculty



**ANDREW STOKES, PHD**  
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## Affiliate Faculty



**RODGERS AYEBARE, MB  
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WORLD BANK



**KOKULO FRANKLIN,  
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& ETHICS  
FHI CLINICAL (FHIC) |  
PREVAIL-LIBERIA



**IAN JOHNSTONE, JD,  
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**ABIGAIL LOWE, MA**  
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**SYRA MADAD, DHSC,  
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**LARA SALAHI, ED.D**  
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**LAUREN SAUER, MSC**  
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EMERGENCY MEDICINE,  
JOHNS HOPKINS MEDICINE



**CHRISTINA YEN, MD**  
ASSISTANT PROFESSOR,  
DEPARTMENT OF INTERNAL  
MEDICINE, UNIVERSITY OF  
TEXAS SOUTHWESTERN  
MEDICAL CENTER (UTSW)

## Events

Over the past year, CEID has convened 8 public events related to emerging infectious diseases. Our events fostered engaging discussions on topics including:

- Global Vaccine Equity and Access
- Global Vaccine Diplomacy
- Pandemic Preparedness & Response
- Building Trust During Scientific Uncertainty
- Endemicity and the Shared Goals of COVID-19 Response
- Preventing the Next Pandemic
- Ebola Virus Disease
- Monkeypoxvirus

The Center has also prioritized collaborating with a broad range of organizations and panelists in order to cover a wide array of topics and foster multidisciplinary engagement. During our first year, our events included over 30 speakers ranging from the BU community to national and international experts. Furthermore, we partnered with three external organizations and five BU affiliates, including :



Pictured above: Dr. Bhadelia (far left) in conversation with a panel during "Preventing The Next Pandemic: Will We Be Prepared?" CEID co-hosted this conversation with BU School of Public Health. Panelists (left to right) included: Angela Rasmussen, Research Scientist, Vaccine and Infectious Disease Organization, University of Saskatchewan; Maria Sundaram, Associate Research Scientist, Center for Clinical Epidemiology and Population Health, Marshfield Clinic Research Institute; Natalie Dean, Assistant Professor, Department of Biostatistics, Rollins School of Public Health, Emory University; & Rajeev Venkayya, CEO of Aerium Therapeutics.

## Event Highlight: Discussion with Professor Jean-Jacques Muyembe-Tamfum & National Institute for Biomedical Research (INRB)



On May 27, 2022, CEID, in partnership with BU's National Emerging Infectious Diseases Laboratories (NEIDL), had the honor of hosting Professor Jean-Jacques Muyembe Tamfum MD, PhD, Director of the National Institute for Biomedical Research (INRB); Dr. Placide Mbala, Chief of the Pathogen Genomics Laboratory at INRB; Dr. Daniel Mukadi, Director of the Rodolphe Mérieux Laboratory of Goma & Provincial Director of the INRB; and Dr. Hugo Kavungo, Deputy Director of the Rodolphe Mérieux Laboratory of Goma. The group participated in a livestreamed panel discussion about Ebola and monkeypox (pictured above) and also met with CEID and NEIDL Faculty about potential scientific collaborations (pictured below).



## Partnerships

CEID forged numerous partnerships with organizations, stakeholders, academic institutions, and community based organizations over the course of our first year. Some of the organizations and initiatives we are proud to work with include:

### **National Emerging Infectious Diseases Laboratories (NEIDL)**

The NEIDL ("needle"), Boston University's maximum containment research program, is a sister institute of CEID and where CEID staff are based. The collaboration between CEID and the NEIDL - including a number of NEIDL faculty acting as core CEID faculty - has led to dynamic events featuring worldwide partners and engaging in dialogue and stakeholder engagement to improve global response to infectious diseases threats.

### **World Health Organization's (WHO) Universal Health and Preparedness Review (UHPR)**

UHPR is based on a voluntary mechanism of peer-to-peer review, led by Member States, to promote greater, more effective international cooperation by bringing nations and stakeholders together in a spirit of solidarity. The technical advisory group acts as an advisory body to WHO in this field. To guide the technical basis for the UHPR, a global group of technical experts was convened to support WHO in the development process of the methodology in assessing preparedness status, including a set of common indicators to be used by all Member States undergoing the review process. Dr. Nahid Bhadelia serves as a Member of the UHPR.



### **Community Engagement Table, RECOVER Long COVID Study**

Boston Medical Center is one of the six Greater Boston health systems that together form the Boston COVID Recovery Cohort (BCRC). The BCRC participates in the NIH-funded RECOVER Study, a 4-year research study of long-COVID. The Community Partnership Table for the BCRC aspires to be a groundbreaking partnership between community members, researchers, and BCRC to collaborate to transform systems to support health equity. It was created to support the RECOVER study and future health equity initiatives across Boston, and it serves to set direction for and oversee this project to meet the goals of the study. Caitryn McCallum, CEID's Director of Research and Partnerships and RECOVER study manager, represents Boston Medical Center on the table.

## **CONNECTED DMV**

CEID partners with CONNECTED DMV and their Pandemic Prevention and Biodefense Initiative, with Dr. Nahid Bhadelia serving on their Steering Committee. CEID serves as a key partner in the Global Pandemic Prevention and Biodefense Center and AHEAD100 initiative to develop and stockpile monoclonal antibodies (mAbs) for the world's top 100 pathogens most likely to cause pandemics and harness all of the rich talent and critical assets to deliver a full-scale response. Through this cooperation, CEID provides expertise and strategic guidance for the new venture and joins forces with CONNECTED DMV in helping to build global resilience against emerging infectious disease threats.

## **Special Pathogens Unit / Boston Medical Center (SPU/BMC)**

SPU is a state-of-the-art maximum containment facility for patients admitted to BMC with severe emerging infectious diseases requiring care in containment. The SPU enhances clinical facilities at BMC by incorporating some of the engineering and safety measures used in specialized hospital facilities and research containment laboratories specifically designed to minimize nosocomial transmission of highly contagious and hazardous diseases. Dr. Bhadelia founded the SPU and served as its Medical Director. CEID Core Faculty Dr. Jai Marathe now holds this position, and CEID continues to support technical aspects of SPU operations.

## **The National Ebola Training and Education Center's (NETEC) Special Pathogens Research Network (SPRN)**

NETEC/SPRN was established in 2016, in collaboration with the US Office of the Assistant Secretary of Preparedness and Response and the US Centers for Disease Control and Prevention. The mission of this partnership is to create a national platform for the study of special pathogens and the evaluation of promising medical countermeasures. CEID, together with NEIDL, serves as a technical partner in this important national effort. Dr. Bhadelia serves as Coordinating Body Co-chair in fulfillment of these efforts and upholding the mission.



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## Global Scholars

CEID's global scholars and partners bring decades of experience with their work in infectious diseases, pandemic prevention, medicine, and research ethics. They have joined our team as affiliate faculty and scholars to support the Center's mission. Our global affiliate faculty members and the institutions they represent include:



Pictured above: Rodgers Ayebare (left), Mosoka Fallah (center), and Kokulo Franklin (right)

### **Rodgers Ayebare, MB ChB, DTM&H, CIC, MSc**

Dr. Ayebare of Infectious Diseases Institute, Makerere University, Kampala is a sepsis clinician, infection preventionist, and infectious diseases scientist interested in outbreak surge capacity development and deployment at Ugandan hospitals and primary healthcare facilities. In addition to this work, Dr. Ayebare works with CEID in carrying out the work of the 'Advancing Field Research in East Africa' known as the Joint Mobile Emerging Disease Intervention Clinical Capability (JMEDICC) project.

### **Mosoka Fallah, PhD, MA, MPH**

Dr. Fallah is the Founder and Chief Executive Officer of Refuge Place International, an NGO in Liberia and the US that addresses how access to quality affordable health care impacts maternal and infant mortality among poor urban and rural dwellers in Liberia. He is also a Health Security Technical Consultant at the World Bank. Dr. Fallah supports CEID's work via the Boston University and the University of Liberia Emerging and Epidemic Virus Research (BULEEVR) project, which aims to create a research training program that offers a pathway for Liberian students to pursue a Doctorate in Philosophy in basic and translational virology, microbiology, clinical research, or public health.

### **Kokulo Franklin, M.Phil, M.Soc.Sc.**

Mr. Franklin is an experienced clinical research professional, currently working with the Partnership for Research on Vaccines and Infectious Diseases in Liberia (PREVAIL), where he serves as Manager for the PREVAIL Office of Regulatory Compliance and Ethics (PORCE). In this capacity, he oversees the ethical and regulatory aspects of all PREVAIL studies and plays a critical part in protocol development, review, and operationalization. He also currently serves as a part-time Lecturer of research ethics at the University of Liberia's Public Health Program. He supports CEID's work on bioethics, working with our multidisciplinary team of researchers from the fields of infectious diseases, medicine, public health, health policy, and ethics to create resources and manuals for healthcare institutions to conduct rapid ethical review of situations occurring in biocontainment care.



# ENGAGING IN POLICY DIALOGUE

A key pillar of our work at CEID is governance. Through our research, we are examining the impact of local, national, and international policies on global response to new infectious diseases threats. Simultaneously, we are working to find novel ways to connect stakeholders with legislators in real time in order to provide scientific knowledge, policy recommendations and impact assessment for a variety of legislation.

## Engagement with MA Legislators

### **Testimony Before The Joint Committee on Covid-19 & Emergency Preparedness and Management**

In April 2021, Dr. Bhadelia and CEID Core Faculty, Dr. Cassandra Pierre both provided testimony during a Joint Informational Hearing on COVID-19 variants. Additionally, on December 16, 2021 Dr. Bhadelia provided testimony during an Oversight Hearing on the status of COVID-19 in the Commonwealth.

### **City of Boston COVID-19 Advisory Committee**

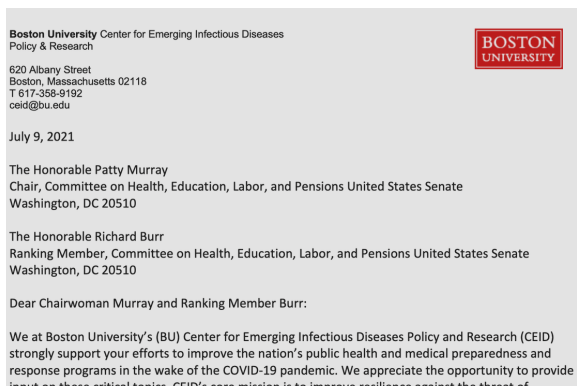
On December 6, 2021, Dr. Pierre was appointed by Boston Mayor Michelle Wu to serve on the City of Boston's COVID-19 Advisory Committee.

## Federal Policy Recommendations: US Senate HELP Committee

Dr. Bhadelia, Lauren Sauer, MsC and Dr. Syra Madad (both affiliate faculty at CEID) co-authored recommendations to the US Senate Committee on Health, Education, Labor and Pensions (HELP Committee), led by Chairwoman Patty Murray and Ranking Member Richard Burr. Their recommendations pertained to the development of pandemic preparedness legislation.

## Policy Briefing : Global Vaccine Access with U.S. Congresswoman Lois Frankel

CEID hosted this virtual briefing in coordination with BU Federal Relations to discuss actionable steps for U.S. policymakers to ensure equitable access to vaccines worldwide. The briefing featured opening remarks by U.S. Congresswoman Lois Frankel (CAS '70). Dr. Amy Maxmen moderated and panelists included Drs. Mosoka Fallah and Josh Michaud (pictured below)



# COMMUNICATIONS & MEDIA

## Communications Strategy

One of our core areas of focus is effective public health communications during emerging infectious diseases outbreaks, including combatting mis- and disinformation. Therefore, our communications strategy is centered around sharing accessible and evidenced-based information on emerging infectious diseases in real time via traditional and new media. We believe that this system of values and approach are why CEID has a strong core audience, which we are continuing to grow and engage.

As a new center, we have started to build a strong digital presence on Twitter, LinkedIn and YouTube. Looking ahead, we plan to increase our volume of content and expand to other platforms, such as Instagram, in order to increase our reach and engage new audiences.

We have also created communications and training materials to help educate the public on emerging infectious diseases. For instance, we have curated and shared various COVID-19 and Long COVID resources in order to encourage access to greater knowledge about COVID-19 guidelines, response, and support networks. Additionally, we publish a series of educational infographics, branded as "Emerging Infectious Diseases in 5," which share five key facts about different emerging infectious diseases, including polio, Marburg, avian influenza (Bird Flu) and Lassa fever.

1,344

Twitter  
Followers

31.2K

Website  
Views

1.1K

YouTube  
Views

449

Faculty  
Mentions

109

CEID  
Mentions

## Media Appearances

We promote the expertise of CEID faculty on all of our communications channels. Our faculty have been a trusted source of information throughout the course of COVID-19 and amidst new outbreaks and challenges, including the current monkeypox outbreak, and they have been featured on and quoted in countless news and media outlets, including:

STAT



The Washington Post



The New York Times



SCIENTIFIC AMERICAN



The Boston Globe



nature

The Atlantic

FORTUNE

TIME

## Highlights

### National TV: MSNBC

Dr. Bhadelia served as an NBC/MSNBC Medical contributor from 2020 to 2022, sharing her infectious diseases expertise throughout the COVID pandemic, while simultaneously increasing CEID's national profile.



### Rapid Communication: Monkeypox

CEID shares real time communications with our virtual audience, including via video. In June 2022, we shared an Instant Update video on our website and social media channels that featured CEID Core Faculty Drs. David Hamer (pictured below) and John Connor answering FAQs about the ongoing monkeypox situation.



### National Podcasts



In May 2021, Dr. Bhadelia joined Quinn Emmett on the Important Not Important Podcast for the episode "The Next Pandemic." During the episode, Dr. Bhadelia announced the launch of CEID.



In May 2022, Dr. Bhadelia joined Clint Watts on the Selected Wisdom Podcast, further publicizing CEID on a national stage.

# PUBLICATIONS

Below is a list of some of the publications related to emerging infectious diseases by CEID faculty. The list is broken down by topic and also includes the names of the CEID-affiliated authors or contributors.

## COVID-19

- **Cell Host & Microbe:** Global COVID-19 vaccine inequity The scope, the impact, and the challenges (Dr. Nahid Bhadelia)
- **American Journal of Public Health:** Excess Deaths During the COVID-19 Pandemic: Implications for US Death Investigation Systems (Dr. Andrew Stokes)
- **JIMR:** Predictors of COVID-19 Preventive Perceptions and Behaviors Among Millennials: Two Cross-sectional Survey Studies (Dr. Traci Hong)
- **Journal of Cardiac Failure:** Coronavirus Disease-2019 and Heart Failure: A Scientific Statement From the Heart Failure Society of America (Dr. Nahid Bhadelia)
- **American Journal of Epidemiology:** Choice of Outcome in COVID-19 Studies and Implications for Policy: Mortality and Fatality (Dr. Eleanor Murray)
- **Annals of Internal Medicine:** Pandemic Response Requires Research Samples: A U.S. Safety-Net Hospital's Experience and Call for National Action (Drs. Nahid Bhadelia & Jai Marathe, Caitryn McCallum, MPH)
- **Geographical Analysis:** Reproducible Science Is Vital for a Stronger Evidence Base During the COVID-19 Pandemic (Dr. Laura White)
- **Epidemics:** Coordinated support for local action: Modeling strategies to facilitate behavior adoption in urban-poor communities of Liberia for sustained COVID-19 suppression (Dr. Mosoka Fallah)
- **Open Forum Infectious Diseases:** US201 Study: A Phase 2, Randomized Proof-of-Concept Trial of Favipiravir for the Treatment of COVID-19 (Dr. Jai Marathe)
- **Health Security:** Building Confidence in COVID-19 Vaccines Through Effective Communication (Dr. Syra Madad)
- **BMJ Journal of Epidemiology & Community Health:** Hospitalisation and mortality from COVID-19 in Mexican indigenous people: a cross-sectional observational study (Dr. Veronika Wirtz)
- **The Lancet Global:** COVID-19 vaccine hesitancy in Africa: a call to action (Dr. Mosoka Fallah)
- **JAMA Network Open:** Minimal SARS-CoV-2 classroom transmission at a large urban university experiencing repeated into campus introduction (Drs. John Connor & David Hamer)

## COVID-19 (continued)

- **Health Security:** Prepared to Act: Lessons Learned by the Special Pathogens Research Network, Based on Collaborations with the NIAID-Led Adaptive COVID-19 Treatment Trial (Lauren Sauer, MsC; Abigail Lowe, MA)
- **The FASEB Journal:** Interferon-alpha or -beta Facilitates SARS-CoV-2 Pulmonary Vascular Infection by Inducing ACE2 (Dr. Adam Hume)
- **Annals of Internal Medicine:** Addressing Inequities in SARS-CoV-2 Vaccine Uptake: The Boston Medical Center Health System Experience (Dr. Cassandra Pierre)
- **BJOG:** Knowledge, attitudes, and practices of pregnant women regarding COVID-19 vaccination in pregnancy in 7 low and middle-income countries: An observational trial from the Global Network (Dr. Patricia Hibberd)
- **Public Health Reports:** Community-Based Workforce for COVID-19 Contact Tracing and Prevention Activities in New York City, July–December 2020 (Dr. Syra Madad)

## Preparedness

- **The Lancet:** Should global financing be the main priority for pandemic preparedness? – Authors' reply (Dr. Gerald Keusch)
- **Harvard Global Health Institute and the Center for Climate, Health, and the Global Environment at Harvard T.H. Chan School of Public Health:** Report of the Scientific Task Force on Preventing Pandemics (Dr. Deborah Kochevar)
- **Health Security:** Developing a Rapid Response Single IRB Model for Conducting Research During a Public Health Emergency (Lauren Sauer, MsC, Abigail E. Lowe, MA)
- **Health Security:** Special Pathogens Readiness in the United States: from Ebola to COVID-19 to Disease X and Beyond (Lauren Sauer, MsC)
- **Disaster Medicine and Public Health Preparedness:** In Layman's Terms: The Power and Problem of Science Communication (Dr. Syra Madad)

## Miscellaneous

- **PNAS:** A 680,000-person megastudy of nudges to encourage vaccination in pharmacies (Dr. Nina Mazar)
- **Harm Reduction Journal:** Integration of a community-based harm reduction program into a safety net hospital: a qualitative study (Dr. Cassandra Pierre)
- **International Journal of Infectious Diseases:** Interruption of tuberculosis detection and care during the Ebola virus disease epidemic (2014–2015) in Liberia: Time-series analyses for 2013–2017 (Dr. Nahid Bhadelia)
- **PLOS Global Health:** Liberia adherence and loss-to-follow-up in HIV and AIDS care and treatment: A retrospective cohort of adolescents and adults from 2016–2019 (Dr. Nahid Bhadelia)

# FINANCES & GRANTS

In CEID's inaugural year, we secured over \$3 million in funding from a variety of prestigious research institutions for our multidisciplinary work in emerging infectious diseases. Below you will find highlights of our research funding.

Funding Partner	Title	Purpose	Funding Amount
National Institutes of Health (NIH)	RECOVER: Researching Covid to Enhance Recovery	To understand, treat, and prevent the long-term effects of COVID-19	\$1,798,207
National Science Foundation (NSF)	PIPP Phase I: Predicting and Preventing Epidemic to Pandemic Transitions	To determine when a disease transitions from epidemic to pandemic, or when exponential increases occur in disease on a large scale	\$1,000,000
Henry Jackson Foundation (HJF)	JMEDICC: Austere environments Consortium for Enhanced Sepsis Outcomes (ACESO)	To advise on policy and procedures related to research, healthcare worker training, infection control and clinical care outbreak response planning related to HJF's work in Uganda	\$187,708
Massachusetts Consortium for Pathogen Readiness (MassCPR)	MassCPR PASC: Autoimmunity and Inflammation Research Working Group	To determine links between autoantibody expression trajectories after SARS-CoV-2 infection and the clinical outcome of post-acute sequelae of SARS-CoV-2 (PASC) up to 1.5 years after symptom onset	\$103,790
National Emerging Special Pathogens Training and Education Center (NETEC)	Special Pathogens Research Network	To serve as a critical liaison to NEIDL and explore logistics and technical issues around creation of special pathogens biorepository.	\$85,595

# LOOKING FORWARD

July 1, 2022

At this writing, the world finds itself in a strange place as it continues to tackle with the uncertainty of what comes next during the COVID-19 pandemic, while trying to catch up on lagging health, education, economic and social indicators. We are facing new infectious diseases threats on multiple fronts, even as we take stock of how the pandemic has changed our institutions, our reserves and our daily lives.

Nothing is more critical in this moment than to ensure that we are building back with intention and transforming ourselves from being a culture of only outbreak response to one of outbreak preparedness and prevention. The upcoming year at CEID will focus on this intention.

For the first half of the academic year, I will be on sabbatical as I have accepted the position as the Senior Policy Advisor on Global COVID-19 Response on the White House COVID-19 Response Team. Dr. Davidson Hamer, fellow infectious diseases physician, a core faculty at CEID and an international renowned public health expert, will serve as the interim director during this time. Dr. Hamer and CEID's incredible faculty and staff will continue to work tirelessly to grow resilience against epidemics.

I hope you will join us this upcoming year during events and lectures, reach out to us with ideas and support our common mission.

**Nahid Bhadelia, MD, MALD**

Founding Director

BU Center for Emerging Infectious Diseases Policy and Research (CEID)



## Stay Connected With The Center



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