

ANNUAL REPORT

BOSTON
UNIVERSITY

Center on Emerging Infectious Diseases



AY 23-24



PHOTO CREDITS

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LETTER FROM OUR DIRECTOR



**NAHID
BHADELIA,
MD, MALD**

Dear Colleagues:

As we reflect on another year of progress at the Boston University Center on Emerging Infectious Diseases (CEID), we are proud to share our accomplishments and outline our continued commitment to addressing the complex challenges posed by emerging infectious diseases in this annual report.

Our strategic focus over the last year has

been on building robust collaborations and driving research in four core areas, which has been instrumental in enhancing global resilience to outbreaks. These areas – data science and surveillance, climate change and One Health, medical and public health preparedness, and public health communications and trust – have been led by expert core directors and have yielded significant results including: forging new global partnerships, engaging with the next generation of public health leaders through student and trainee participation, securing substantial research grants, and contributing to the scientific and policy discourse through critical publications. The report shares examples of this core driven work, highlighting in particular the EPISTORM grant from Centers for Disease Control and Prevention led by Dr. Laura White and Dr. Kayoko Shioda, which partners with Northeastern University around building statistical methodology and data approaches for management of outbreaks.

A highlight of the past year has been our work towards the launch of Biothreats Emergence, Analysis and Communications Network (BEACON), an ambitious surveillance program which includes a web-based platform designed to report and analyze new threats in animals, humans, and plants, integrating a partnership with the Hariri Institute and HealthMap at Boston Children’s Hospital.

Described in greater detail below, BEACON represents a significant step forward in our efforts to detect and transparently report emerging infectious diseases in real time, while applying predictive intelligence to assess possible outcomes of a new threat.

Our signature symposia have continued to be a vital platform for bringing together practitioners, researchers, policymakers, and the private sector to address pressing issues related to emerging infectious diseases. We welcomed White House Office of Pandemic Preparedness Inaugural Director, Dr. Paul Friedrichs; UN Under-Secretary-General Melissa Fleming; Director of the Center for Forecasting and Outbreak Analytics at the CDC, Dr. Dylan George; and Executive Director of the Boston Public Health Commission, Dr. Bisola Ojikutu, among many other distinguished guest speakers.

We remain steadfast in our commitment to engaging the public through innovative channels, including our popular photo contest which examined the experiences of the BU community over the 4 years of the COVID-19 pandemic, and a trainee summer research grant program. Many of the photos submitted to the contest can be found throughout this report. By fostering public awareness and understanding of infectious diseases, we can empower

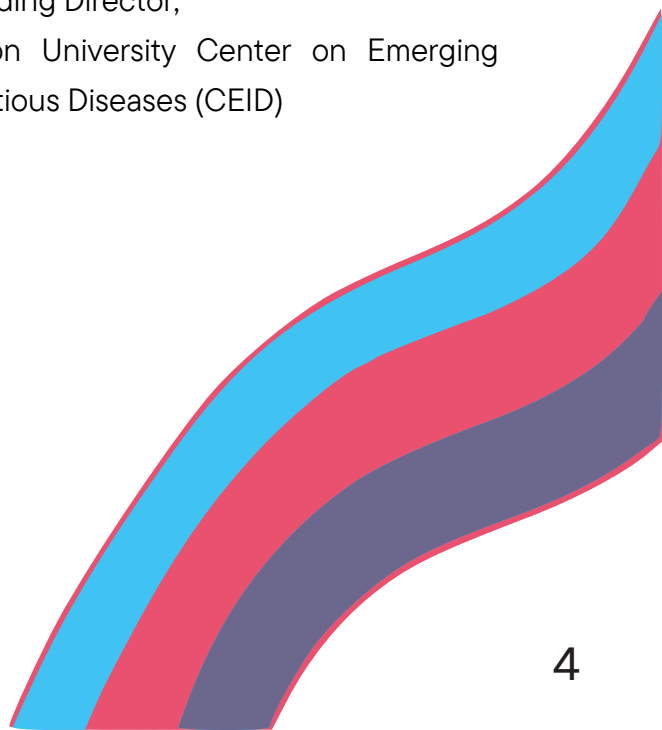
individuals to play an active role in prevention and response.

Some news closer to home: CEID also moved offices this year! Our new home is at 111 Cummington Mall, Suite 140, shifting us from the medical campus to a milieu that allows us to interact with other university wide centers that are co-located at the same site.

Looking ahead, CEID will continue to serve as a trusted resource for stakeholders and generate critical evidence to inform policy and programmatic decisions. We are dedicated to building upon our successes and expanding our impact in the fight against emerging infectious diseases.

Thank you for your continued support.

Nahid Bhadelia, MD, MALD
Founding Director,
Boston University Center on Emerging
Infectious Diseases (CEID)





OVERVIEW OF CEID

MISSION

Boston University's Center on Emerging Infectious Diseases (CEID) is a university wide center focused on global health security and linking technical knowledge to policy issues related to emerging pathogens and epidemic threats. CEID's core mission is to improve resilience against threat of emerging & epidemic infectious diseases worldwide through public health and policy research, global and local capacity strengthening, training, evidence generation for policy support, and community engagement.

Our work focuses on two overarching questions: How should public resources, public health and medical system responses, and public policies be shaped and focused between and during infectious diseases threats to decrease our vulnerabilities as a society? And what evidence do we have to support the decisions?

The center's faculty represent 8 BU Schools and Colleges as well as external and international affiliates, bringing expertise from clinical infectious diseases, infection control, global and national policy, to communications, law, bioethics, epidemiology, and data sciences. CEID's work includes multidisciplinary research (funded in part by the National Institutes of Health and National Science Foundation as well as private foundations), technical assistance and training (including a Fogarty International Center funded training program in Liberia, and technical partnerships with national and international organizations), policy support to local and national elected representatives, and impactful public communications in the media and through public facing events. The center is a member of the World Health Organization's Global Outbreak Alert and Response Network (GOARN) and the National Special Pathogens Training and Education Center (NETEC), a US based network funded by Department of Health and Human Services.

METHOD

We approach our work with GRIT. Just as the root causes that give rise to pandemics are multifaceted, 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.

AY 2023-2024 BY THE NUMBERS

3356

FOLLOWERS ACROSS
ALL SOCIAL MEDIA
PLATFORMS

40

FACULTY

4

CORE RESEARCH
AREAS

197

PUBLICATIONS

**\$3
MILLION**

IN NEW &
CONTINUING
RESEARCH
FUNDING

216

FACULTY MEDIA
APPEARANCES

848

EVENT
ATTENDEES

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 is supported by two full-time staff members, Anna Bakanova and Cassandra Kennedy. 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



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Additionally, students at both the undergraduate and graduate level throughout BU (CAMED, CAS, COM, ENG, and SPH) have contributed to CEID's research and work.

RESEARCH CORE FOCUS AREAS

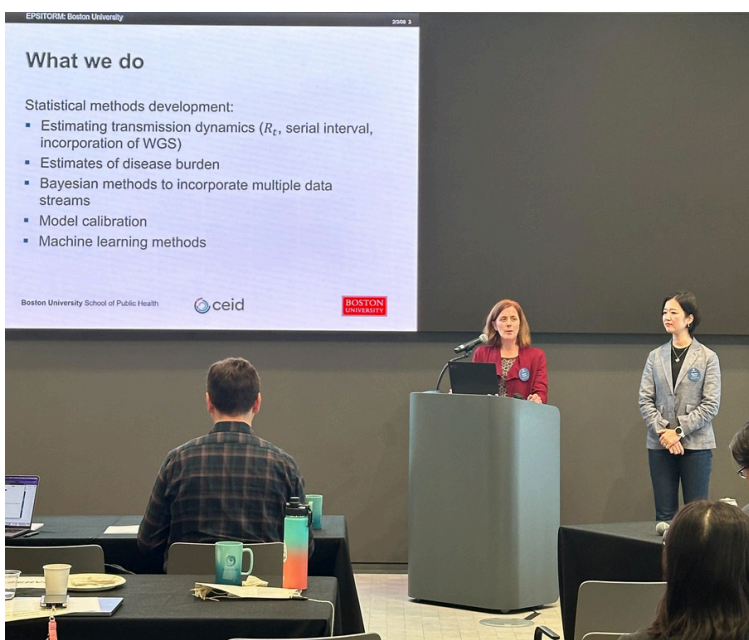
CEID's work centers around four core research areas. Core Research Initiatives are meant to accelerate the scholarly activities, grant applications, faculty collaboration, and stakeholder engagement in a particular area of high priority in the field as it relates to emerging infectious diseases.

Data Science and Surveillance

Led by Drs. Kayoko Shioda and Laura White

The Data Science and Surveillance core focuses on connecting researchers to develop new data sources, methods, and tools to identify and track emerging infectious disease threats. This involves bringing together researchers to synergize their efforts and encourage new collaborations, particularly between data owners, methodologists, and practitioners to generate novel approaches to surveillance. The core generates ambitious ideas and plans for the role of data science in preparing for and combatting emerging infectious disease threats.

This year, the core connected with audiences both virtually and in Boston with speaker panels “From Data to Action: Leveraging Data Science for Effective Health Policy and Surveillance Against Emerging Infectious Disease Threats” and “Reflections and Opportunities in Emerging Infectious Diseases.”



Core co-directors Drs. Kayoko Shioda & Laura White at EPISTORM Annual Meeting, February 2024

RESEARCH CORE FOCUS AREAS

EIDs, Climate Change, and One Health

Led by Drs. David Hamer and Kayoko Shioda

CEID's One Health and Climate Change core unites experts from ecology, climate change, One Health, planetary health, emerging infectious diseases, and systems science, along with practitioners and policy experts in public health surveillance and pandemic preparedness, to identify, review, and prioritize research gaps that must be addressed to prevent future global pandemics. The core aims to develop new data sources, methods, and tools to identify, monitor, and characterize emerging infectious disease threats in the era of climate change.

In Fall 2023, the core hosted a guest lecture, "Interactive effects of climate and land use change transform the landscape of vector-borne disease" as well as a BU-wide Research on Tap bringing together researchers working on climate change issues across the schools.

Trust and Public Health Communication

Led by Drs. Traci Hong and Veronika Wirtz

Trust in science and in public health institutions and organizations is essential to effectively mobilize citizens to respond to threats to public health and safety. However, over the last few decades, especially during the COVID-19 pandemic, public opinion of science has gradually diminished the ability of organizations and institutions to translate science into practical guidance to promote public health.

This core, through transdisciplinary research, aims to identify the best policies and practices a) to share information with the general public as well as specific stakeholders before and during a fast moving infectious diseases crisis, and b) to build trust in science and public health institutions and organizations, especially as they related to infectious diseases control.

This year, the core connected with audiences both virtually and in Boston with guest lectures and panel discussions, "Building Resilience: The Transformative Role of AI in Global Public Health Communication" and "Facts and misinformation about COVID-19: building trust in science." The core also developed an annotated bibliography on trust and communications.

RESEARCH CORE FOCUS AREAS

Public Health, Medical Preparedness, and Response to EIDs

Led by Dr. Nahid Bhadelia

CEID's Public Health and Medical Response core connects researchers and practitioners to accelerate equitable development and distribution of diagnostics, vaccines, and therapeutics for priority pathogens.

This core studies the effectiveness of national and international public health responses to emerging infections, analyzes healthcare utilization during outbreaks, and improves infection control and clinical standards. The core's work involves historical case studies, policy evaluation, predictive methodology development, and identifying best practices.

In addition to supporting center-wide events, this core welcomed global guest speakers for hybrid events, "Negotiating the Pandemic Treaty: Challenges for consensus and equity" and "Responding to New Outbreaks Faster, Better, & More Equitably: CEPI & The 100 Days Mission." The core also launched a research project with Resolve to Save Lives examining clinical practice guidelines for priority pathogens across international and national public health organizations.



Dr. Nahid Bhadelia at the United Nations General Assembly, September 2023

RESEARCH

EPISTORM

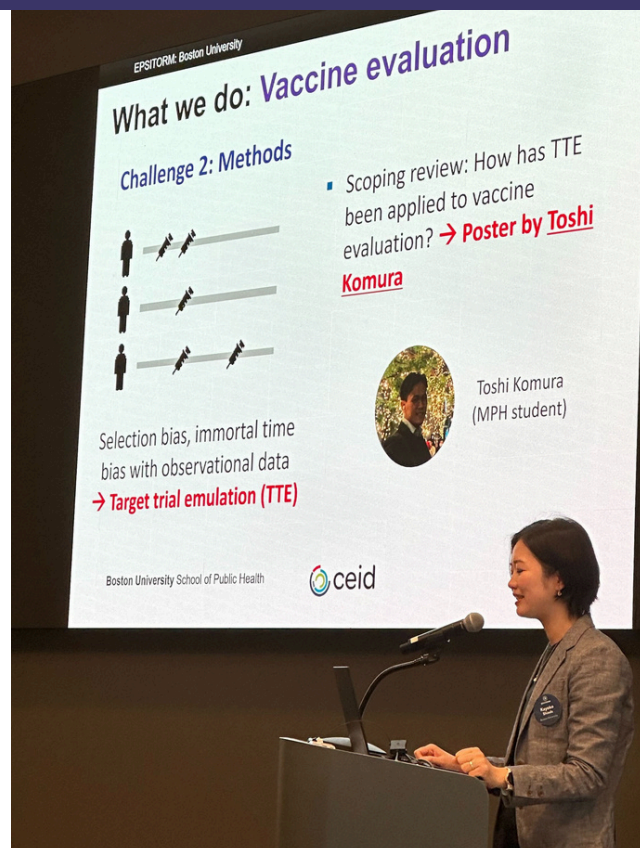
Drs. Kayoko Shioda and Laura White, who co-lead CEID's Data Science & Surveillance research core, are partners on EPISTORM, a consortium of researchers across several nation-wide institutions. Based at Northeastern University, EPISTORM is part of a larger CDC effort that has created a network of thirteen centers, called Insight Net, created to improve capacity to respond to emerging infectious disease threats. Funded by a \$17.5 million, five-year grant from the CDC, EPISTORM's research encompasses efforts to improve training and analytics, creating more accessible and better tools, and improving data availability. EPISTORM provides expertise in forecasting, real-time estimation of

infectious disease transmission parameters, wastewater analytics, and vaccine effectiveness studies. This consortium collaborates closely with public health practitioners and government agencies to understand critical needs and identify and address existing gaps.

Dr. White's work is focused on developing better analytics for understanding how fast a disease is spreading and what populations might be most impacted by transmission. "We are working to improve methods we have previously developed and create better software tools that practitioners can more readily use and interpret," she explains.

Dr. Shioda's projects are related to vaccine evaluation. "We are developing new data streams and analytic tools to assess vaccine effectiveness and safety in real time. Our projects aim to identify the optimal vaccine dosing schedules to obtain robust immune protection. I am dedicated to making modern, cutting-edge epidemiological methods accessible and usable for state partners and public health practitioners so that they can be quickly implemented in emergency situations."

In addition to Boston University, EPISTORM also includes researchers at Los Alamos National Laboratories, Indiana University, University of Florida, University of Washington, Ginkgo Bioworks, UCSD, and Maine Health, among others.



RESEARCH

BIOTHREATS EMERGENCE, ANALYSIS AND COMMUNICATIONS NETWORK (BEACON)



A new open source global surveillance program

This year, CEID has been hard at work behind the scenes to develop the BEACON, a new global program that will be housed within CEID. Officially launching in the 2024-2025 academic year, BEACON is an open-source, global surveillance program, linking public health authorities, practitioners, researchers, and the general public. It facilitates data sharing and provides contextual knowledge about new threats rapidly and transparently. It is dedicated to the rapid collection, vetting, reporting, and analysis of information on emerging threats affecting humans, domestic animals, wildlife, plants, and the environment globally.

BEACON combines emerging infectious diseases surveillance, a global network of moderators who are subject matter experts, and the power of artificial intelligence and large language models. By providing early warnings of sentinel cases, clusters, and outbreaks, BEACON will enable earlier public health responses.

The program is based at CEID and operated in partnership with BU's Hariri Institute for Computing and Data Sciences and HealthMap at Boston Children's Hospital. It has been funded to date by National Science Foundation, the Noyce Foundation, and with support from the University itself. The program was recently announced at the Coalition for Epidemic Preparedness Innovations (CEPI)'s Global Pandemic Preparedness Summit in Rio de Janeiro, Brazil in July 2024.

When it launches in Spring 2025, BEACON will provide research and training opportunities to not only the BU community but also global partners, particularly in low and middle-income countries in epidemiology, surveillance, data sciences, and artificial intelligence. Stay tuned for more information.

LEVERAGING GPT-4 TO EXPEDITE PANDEMIC RESPONSE

As demonstrated during the COVID-19 pandemic, an infectious disease emergency can lead to an explosion of publications on the new pathogen of interest. This plethora of information can become time-consuming for researchers to sift through when conducting a literature review. A large language model can reduce this burden by identifying key studies, including those that can help highlight possible new treatments.

Led by Dr. Ioannis Paschalidis, “Automating biomedical literature review for rapid drug discovery: Leveraging GPT-4 to expedite pandemic response” in the International Journal of Medical Informatics was co-authored by CEID director Dr. Nahid Bhadelia, Jingmei Yang, Kenji Walker, Ayse Bekar-Cesaretli, Boran Hao, Dr. Diane Joseph-McCarthy, all from Boston University. Their research explores the potential of artificial intelligence (AI) systems like ChatGPT to automate the biomedical literature review process for rapid drug discovery.

For this study, the team chose SARS-CoV-2 and Nipah viruses to develop and validate this approach, with these two viruses representing two extremes of available biological knowledge, SARS-CoV-2 being a current and widely studied pathogen and Nipah being an emerging pathogen with a smaller volume of available literature. This allowed researchers to compare the ability of Large Language Models (LLMs) to compare the performance of this approach on pathogens with different levels of biological knowledge.

Because of the larger sample of source material available on SARS-CoV-2, for LLM, ChatGPT was more successful at identifying literature on SARS-CoV-2 than on Nipah virus, though both showed promise. This research highlights the utility of ChatGPT in drug discovery and development and shows great potential to enable rapid drug target identification during future pandemic-level health emergencies.

International Journal of
medicalinformatics

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An Official Journal of the International Medical Informatics Association
and the European Federation for Medical Informatics

RESEARCH

TRUST AND HEALTH COMMUNICATION: An annotated bibliography

TRUST AND HEALTH COMMUNICATION: AN ANNOTATED BIBLIOGRAPHY

Dr. Veronika Wirtz, who co-leads CEID's Trust & Public Health Communication core, together with BU SPH student Maxwell Barainca, created an annotated bibliography of a selection of recent key reports on trust in health communications including systematic reviews, contributions and discussions from experts,

population survey data, and frameworks. They created this annotated bibliography to serve as a short list of references and best practices in the field of health communication. It is a valuable resource for practitioners and researchers as dis- and misinformation become an increasing concern in health communication and outbreak response.

Authors:

Maxwel Barainca, MPH, Boston University
School of Public Health
Veronika Wirtz, PhD, MSc, Boston University
School of Public Health

The bibliography is divided into four main themes: discussion on trust, trust and health communication based on the peer review literature, population statistics, and communication guidelines and frameworks. You can find the report on our website and use it today!

FUTURE STATE OF SMALLPOX MEDICAL COUNTERMEASURES

This year, the National Academies of Sciences, Engineering, and Medicine convened an committee commissioned by the Administration for Strategic Preparedness and Response (ASPR), examining the "Current State of Research, Development, and Stockpiling of Smallpox Medical Countermeasures (MCMs)." CEID director Dr. Nahid Bhadelia, served as a member of this committee which provided advice to the US government on developing better MCMs to respond to an outbreak of smallpox or related virus. The report builds on lessons learned from the COVID-19 and 2022 mpox pandemics. Since smallpox was eradicated in 1980, the likelihood of such an outbreak is very small, but never non-zero, as Dr. Bhadelia remarked to Science Magazine during the launch of the committee report .

Dr. Bhadelia also serves as a standing member of the National Academies Forum on Microbial Threats, which generates independent and authoritative discourse on prevention, detection, surveillance, and responses to emerging and reemerging infectious diseases.

RESEARCH

STUDENT RESEARCH GRANTS

This year we were proud to award two grants of \$5,000 each in support of student research projects.

One awardee, **Katherine Reifler, MD**, is pursuing a Population Health Research Master of Science in the School of Public Health. The goal of her current research is to understand the impact of infection with HIV on Chagas disease cardiomyopathy. Patients without HIV were previously recruited for a study of Chagas cardiomyopathy and underwent cardiac analysis and staging to determine manifestations of Chagas cardiomyopathy. Since June, the project has recruited 14 patients with both HIV & T. Cruzi infection (Chagas disease) and are currently completing their cardiac analysis. Reifler plans to continue recruitment for at least 6 months more & will perform age and sex-matched analysis comparing the cardiac manifestations of Chagas disease amongst those with and without HIV.

Palak Shah, an MD student in the Chobanian & Avedisian School of Medicine, is studying TB transmission risk in Pudicherry, India. Her research, part of

the TB-VENT study, measures ventilation rates in homes and offices and calculates transmission risk using the Wells-Riley equation. Preliminary findings suggest higher TB transmission risk in urban homes. The team aims to extend this research to other respiratory infections, like influenza and COVID-19. As climate change exacerbates health disparities and encourages indoor activities, data from this study may inform strategies to reduce infectious disease transmission through improved ventilation.



Palak Shah and fellow researchers in Pudicherry, India

EVENTS

Over the past year, CEID has convened several public events related to emerging infectious diseases. Our events fostered engaging discussions and collaboration across the university.



- Held in partnership with Hariri Institute for Computing and Computational Science & Engineering
- Featuring Dr. Demetre Daskalakis, Dr. Nikki Romanik, Adrianna Boulin, Dr. Céline Gounder, Dr. Ashish Jha, and Dr. Nahid Bhadelia
- 194 attendees (hybrid)

REFLECTING ON ONE YEAR OF MPOX RESPONSE

August 17, 2023



- Two panel discussions, the first with Drs. Laura White, Dylan George, Catherine Brown, John Brownstein, & Birgitte Simen; the second with Dr. Cassandra Pierre, Dr. Bisola Ojikutu, Dr. Matthew Hepburn, Dr. Vikramjit Mukherjee, & Cynthia Spishak;
- Keynote address by Dr. Paul Friedrichs
- 195 attendees (hybrid)

THE SIGNAL AND THE RESPONSE: US READINESS FOR NEW INFECTIOUS DISEASES THREATS

March 20, 2024

EVENTS



- Hosted in partnership with Hariri Institute for Computing and Computational Science & Engineering
- Featuring Melissa Fleming, UN Under-Secretary-General for Global Communications
- 133 attendees (hybrid)

BUILDING RESILIENCE: THE TRANSFORMATIVE ROLE OF AI IN GLOBAL PUBLIC HEALTH COMMUNICATIONS

April 8, 2024

Sept. 22, 2023 | Facts and misinformation about COVID-19: building trust in science (in-person) featuring Dr. David Hamer, Dr. Cassandra Pierre, Dr. Joan Donovan, and Anna Kuchment

Oct. 10, 2023 | Interactive effects of climate and land use change transform the landscape of vector-borne disease (hybrid) in partnership with the SPH Center for Climate and Health featuring Dr. Erin Mordecai

Oct. 19, 2023 | Responding to New Outbreaks Faster, Better, & More Equitably: CEPI & The 100 Days Mission (remote) featuring Dr. Richard Hatchett and Dr. Nahid Bhadelia

Nov. 15, 2023 | Negotiating the Pandemic Treaty: Challenges for consensus and equity (hybrid) featuring Dr. Adam Kamradt-Scott

Nov. 29, 2023 | Data Science and Surveillance: Reflections and Opportunities in Emerging Infectious Diseases (hybrid) featuring Dr. David Hamer, Dr. Heather Hsu, and Dr. Yannis Paschalidis

April 30, 2024 | From Data to Action: Leveraging Data Science for Effective Health Policy and Surveillance Against Emerging Infectious Disease Threats (hybrid) featuring a panel discussion with Dr. Larry Madoff, Dr. Alex Vespignani, and Dr. Caroline Buckee

May 9, 2024 | H5N1: What do we know so far? (remote) featuring Dr. Nahid Bhadelia, Dr. John Connor, Dr. Jessica Leibler, Lauren Sauer, Dr. Kayoko Shioda, and Dr. Alessandro Vespignani, PhD

LIFE IN THE AGE OF A PANDEMIC PHOTO CONTEST



The COVID-19 pandemic created immediate and long-lasting changes to how we live, work, gather, and care for one another. With this retrospective photo competition, CEID invited the Boston University and Boston Medical Center communities to share their own experience shown through images. The 98 submissions received largely reflected the personal, close-to-home experiences of pandemic life and how people found joy or meaning in their everyday lives during a crisis.

FIRST PLACE: “NO TOILET PAPER?!” BY JENNIFER ATKINS

“In the beginning, before reality had set in, I took my kids shopping and we were stunned to see completely empty shelves where there had once been abundant supplies of paper goods (toilet paper, facial tissues, and paper towels). This photo is my very flexible son Shay showing off the empty aisle (and nearly empty store).”

SECOND PLACE: “FENWAY GRADUATION” BY RAINA LEVIN

“In May 2021, I felt very lucky to have a college graduation at all. My graduation was held at Fenway Park on a surprisingly cold May morning. Students were spaced apart and each allowed only one guest. My aunt, who lives locally, was my guest of honor. While subdued, my graduation still felt festive, a reminder that we could still be together while physically distant.”



LIFE IN THE AGE OF A PANDEMIC PHOTO CONTEST

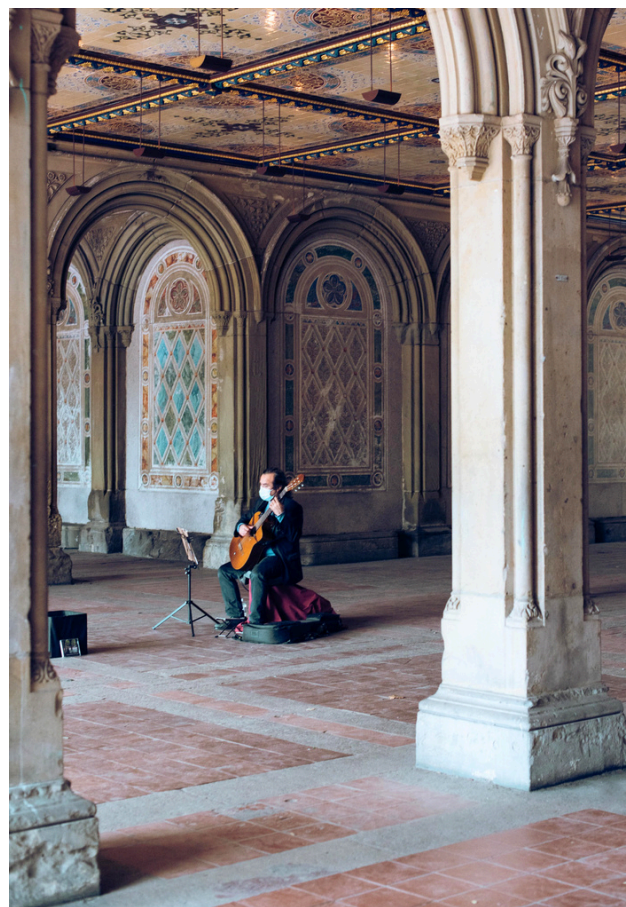


POPULAR CHOICE WINNER: “A NEW POLLUTION?” BY STEPHANIE LOO

“Over three years since I had last been able to see family in SE Asia, I came across a new form of plastic litter on the beach – a discarded mask encrusted with shells. A new form of pollution? How nature adapts to the challenges of the past and the uncertainties of the future.”

POPULAR CHOICE WINNER: “RESILIENCE IN SOLITUDE” BY AUBREY ODOM

“Street performers and musicians invigorate public spaces with their work. Central Park, a typically bustling hub of activity in New York City, experienced a significant decrease in visitors and foot traffic during the pandemic due to lockdown measures and safety concerns. At this point in time (summer 2021), performers cautiously and slowly rejoined these hubs of public life, taking precautions against COVID-19 including distancing, masking and vaccinations. However, the voices of these performers were often muted by masking, particularly for those performers who were more susceptible to acquiring viral illnesses. This photo illustrates the isolation that many of those performers must have felt who are so dependent on social interaction and entertaining the public as part of their act.”



PARTNERSHIPS

CEID continued to strengthen existing relationships and forged new partnerships with organizations, stakeholders, academic institutions, and community based organizations over the course of this year. Some of the organizations and initiatives we are proud to work with include:

National Emerging Special Pathogens Training and Education Center (NETEC)



NETEC is a collaboration between several universities and hospitals throughout the United States, focusing on special pathogen preparedness and response with the goals of driving best practices, closing knowledge gaps, and developing innovative resources. NETEC's vision is a sustainable infrastructure and culture of readiness for managing suspected and confirmed special pathogen incidents across the United States public health and health care delivery systems.

National Emerging Infectious Diseases Laboratories (NEIDL)



The NEIDL, 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.

WHO's Global Outbreak Alert & Response Network (GOARN)



GOARN is a World Health Organization network of over 250 technical institutions and networks globally that respond to acute public health events with the deployment of staff and resources to affected countries. Coordinated by an Operational Support Team based at the WHO headquarters in Geneva and governed by a Steering committee, GOARN aims to deliver rapid and effective support to prevent and control infectious diseases outbreaks and public health emergencies when requested. CEID joined as a member of GOARN in 2023.

SELECTED PUBLICATIONS

CEID faculty released over 140 publications related to infectious diseases and public health in the past year. Below is a selection of highlighted work.

- **Think Global Health:** Smallpox Biosecurity in a New Era of Technology (Dr. Nahid Bhadelia)
- **Front Public Health:** Long COVID awareness and receipt of medical care: a survey among populations at risk for disparities (Dr. Jai Marathe)
- **International Journal of Medical Informatics:** Automating Biomedical Literature Review for Rapid Drug Discovery: Leveraging GPT-4 to Expedite Pandemic Response (Dr. Nahid Bhadelia)
- **Milbank Memorial Fund:** Measles: Forecasting the Next Decade in the United States (Dr. Laura White, Dr. Nahid Bhadelia)
- **Nature Communications:** Travel surveillance uncovers dengue virus dynamics and introductions in the Caribbean (Dr. David Hamer)
- **American Journal of Public Health:** Excess Mortality as a Tool to Monitor the Evolution of Health Emergencies: Choices, Challenges, and Future Directions (Dr. Andrew Stokes)
- **National Academies of Sciences, Engineering, and Medicine:** Future State of Smallpox Medical Countermeasures (Dr. Nahid Bhadelia)
- **Nature Communications:** Comparative effectiveness of alternative intervals between first and second doses of the mRNA COVID-19 vaccines (Dr. Kayoko Shioda, Toshiaki Komura)
- **PNAS:** Excess natural-cause mortality in US counties and its association with reported COVID-19 deaths (Dr. Andrew Stokes)
- **Journal of Travel Medicine:** From GeoSentinel data to epidemiological insights: a multidisciplinary effort towards artificial intelligence-supported detection of infectious disease outbreaks (Dr. David Hamer)
- **Association for Computational Linguistics:** COVID-19 Vaccine Misinformation in Middle Income Countries (Dr. Traci Hong, Dr. Veronika Wirtz)
- **Journal of Environmental Exposure Assessment:** Considerations for conducting wastewater-based public health assessments in migrant populations (Dr. Muhammad Zaman)
- **New Media & Society:** Effects of #coronavirus content moderation on misinformation and anti-Asian hate on Instagram (Dr. Traci Hong)
- **Journal of Global Health:** Antibiotic resistance trends for common bacterial aetiologies of childhood diarrhoea in low- and middle-income countries: A systematic review. (Dr. David Hamer)

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 on topics including COVID-19, mpox, malaria, & H5N1. They have been featured on and quoted in countless news and media outlets, including:



X followers

2017

Instagram followers

271

LinkedIn followers

790

Website views

1920

YouTube views

2423

LOOKING FORWARD

As we conclude this annual report, we are excited to anticipate the launch of BEACON, in just six months. We believe BEACON will revolutionize our ability to detect, track, and respond to infectious disease outbreaks, ultimately saving lives. We will also be continuing our work in the four core areas that provide the scaffolding for our research.

We will also share updates on recently initiated projects, such as a July 2024 workshop on Expanded Access Protocols and their utility and potential risks in providing access to potentially promising medical treatments to patients, while improving scientific evidence base in sporadic emerging infectious disease cases. We are also launching new partnerships.

We are committed to elevating our signature symposia to new heights by inviting renowned world leaders in public health and infectious diseases to join our esteemed panel of experts. This fall, we will host a timely meeting on “Global Equity in Access to Pandemic Tools” which we hope you will join us for.

While these exciting initiatives are on the horizon, our core mission remains steadfast. We will continue to build upon our strengths in data science, surveillance, climate change, preparedness, and public health communications to create a healthier, safer world for all.

Thank you for your continued support and partnership.

Sincerely,

Nahid Bhadelia, MD, MALD

Founding Director,

Boston University Center on Emerging Infectious Diseases (CEID)

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