

*The National Academies of*  
**SCIENCES • ENGINEERING • MEDICINE**

**Understanding the Economics of Microbial Threats – A Workshop**

**Agenda**

**JUNE 12-13, 2018**

The National Academies Keck Building  
500 Fifth Street NW - Room 100  
Washington, DC 20001

**Abbreviated Statement of Task:**

This 1.5 day public workshop will examine the interaction of economic activity and microbial threats, including infectious disease outbreaks and antimicrobial resistance. A critical focus of the workshop will be to discuss the need for key metrics of risk and analytical tools to provide a comprehensive understanding of the economic risk that microbial threats pose. The workshop will also focus on exploring approaches to incorporate estimates of infectious disease risk to overall macroeconomic assessments of economic growth in countries to incentivize action that minimize these threats. Specifically, this workshop will feature invited presentations and discussions on topics including:

- Economic costs from infectious diseases that may place a disproportionate burden on low- and middle-income countries but impact regional and global stability due to interconnected financial systems worldwide.
- Gaps in assessing economic costs of microbial threats through multiple channels of disruption, including dynamics of fear-based behavioral change.
- Critical opportunities and challenges to model and develop metrics of risk, including identifying and using appropriate data and dealing with uncertainty, and to build analytical tools to understand the potential economic consequences of infectious diseases on the short, medium, and long term.
- Strategies to incorporate estimates of infectious disease risk to overall macroeconomic assessments of economic growth to ensure the risks are reflected in financial markets and business investment decisions or influence flows of development assistance, and to link these assessments to incentives for action to minimize the threats.
- Implications for the International Health Regulations, particularly on trade and travel measures, as well as for upstream and downstream strategies, policies, and interventions—such as effective communication messages, simulation exercises, investment decisions, and One Health approaches—that various sectors of government, multilateral institutions, and others may carry out in preventing and mitigating the economic costs.
- Collaboration and coordination mechanisms among various stakeholders and across sectors in public health, animal health, economics, travel, trade, commerce, agriculture, among others.

Workshop speakers and discussants will contribute perspectives from government, academia, private, and nonprofit sectors.

DAY 1 – TUESDAY, June 12, 2018

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8:30 am ET **Welcome Remarks**

PETER DASZAK, *Chair of the Forum on Microbial Threats*  
President  
EcoHealth Alliance

**The Neglected Dimension of Economic Security: Managing Microbial Threats**

LAWRENCE H. SUMMERS (by video)  
Charles W. Eliot University Professor & President Emeritus  
Harvard University

**Workshop Overview and Goals**

PETER SANDS, *Workshop Chair*  
Executive Director  
The Global Fund to Fight AIDS, Tuberculosis & Malaria

**Session I: The Economic Cost of Microbial Threats**

9:10 am **Part A: The Economic Risk of Endemic Infectious Diseases**

Objectives:

- Present the economic costs from endemic infectious diseases that may place a disproportionate burden on low- and middle-income countries but impact regional and global financial stability.
- Discuss gaps in assessing costs of endemic microbial threats through multiple channels of disruption.

*Moderator:* Thomas Inglesby, Johns Hopkins Bloomberg School of Public Health

**The Economic Case for Eradicating Polio**

KIMBERLY THOMPSON  
President  
Kid Risk, Inc.

**Epidemic to Endemic – The Economic Impact of HIV/AIDS**

KATHARINA HAUCK  
Senior Lecturer in Health Economics  
Imperial College London

**Costing of Tuberculosis Control**

ANNA VASSALL  
Professor of Health Economics, London School of Hygiene & Tropical Medicine  
Joep Lange Chair, University of Amsterdam

## WORKSHOP ON UNDERSTANDING THE ECONOMICS OF MICROBIAL THREATS

9:45 am **Q&A Discussion**

10:20 am **Break**

10:35 am **Part B: Economics and Modeling of Emerging Infectious Diseases and Biological Risks**

Objectives:

- Discuss critical opportunities and challenges to model and develop metrics of risk, including the use of appropriate data and the management of uncertainty.
- Examine ways to develop and use analytical tools to understand the potential economic consequences of infectious disease outbreaks on the short, medium, and long term.
- Review efforts to understand and quantify the economic impact of emerging intentional and accidental biological risks, including increasing ability to create and modify pathogens.
- Discuss shared elements and differences with other microbial threats when estimating the cost of a biological attack.

*Moderator:* Rebecca Katz, Georgetown University

**The Cost of Pandemic Influenza – What has changed and what have we learned 100 years later?**

MARTIN ISAAC MELTZER

Senior Economist and Distinguished Consultant, Division of Preparedness and Emerging Infections  
U.S. Centers for Disease Control and Prevention

**Assessing Economic Vulnerability to Emerging Infectious Disease Outbreaks – Ebola versus Zika**

ANAS EL TURABI

Frank Knox Fellow in Health Policy  
Harvard University

**Epidemic Risk Modeling – How can we measure the impact of aversion behavior and cascading social responses?**

CARLOS CASTILLO-CHAVEZ

Professor of Mathematical Biology  
Arizona State University

**The Global Catastrophic Biological Risks**

THOMAS INGLESBY

Director of the Center for Health Security  
Johns Hopkins Bloomberg School of Public Health

11:30 am **Q&A Discussion**

12:00 pm **Lunch**

## WORKSHOP ON UNDERSTANDING THE ECONOMICS OF MICROBIAL THREATS

### 1:00 pm **Part C: The Cost of Antimicrobial Resistance (AMR)**

Objectives:

- Present current models to estimate the cost of AMR and the scenarios considered.
- Discuss the limitations and challenges in setting the parameters and assumptions to calculate the cost of AMR.
- Understand the cost-effectiveness of interventions and strategies to build the investment case for controlling AMR

*Moderator:* Keiji Fukuda, University of Hong Kong

#### **Considerations for Estimating the Cost of AMR – Direct vs Indirect Costs**

MUKESH CHAWLA

Adviser for Health, Nutrition and Population  
The World Bank

#### **Cost-Effectiveness of Interventions to Limit the Spread of AMR – A Perspective from the Organisation for Economic Co-operation and Development (OECD)**

MARK PEARSON

Deputy Director of Employment, Labour and Social Affairs  
Organisation for Economic Co-operation and Development

#### **The Impact of AMR beyond the Health Sector? – How to make the investment case for controlling AMR?**

RAMANAN LAXMINARAYAN

Director and Senior Fellow  
Center for Disease Dynamics, Economics & Policy

### 1:40 pm **Q&A Discussion**

## Session II: The Economic Cost of Preparedness for Microbial Threats

### 2:10 pm **Part A: National Preparedness**

Objectives:

- Discuss implications for the International Health Regulations (IHR) and Performance of Veterinary Services Pathway (PVS), as well as for upstream and downstream strategies, policies, and interventions—such as effective communication messages, simulation exercises, investment decisions, and One Health approaches—that various sectors of government, multilateral institutions, and others may carry out in preventing and mitigating the economic costs.

*Moderator:* Beth Cameron, Nuclear Threat Initiative

#### **Economics of National Preparedness to Fight against Microbial Threats**

TOLBERT NYENSWAH

Director General, National Public Health Institute of Liberia  
Former Deputy Minister of Health for Disease Surveillance and Epidemic Control, Liberia

## WORKSHOP ON UNDERSTANDING THE ECONOMICS OF MICROBIAL THREATS

### **Cost-Benefit Analysis of Outbreak Response in the Context of the Monitoring and Evaluation of the IHR**

ANDREAS GILSDORF

Independent Consultant for Public Health Security

Former Director of Surveillance, Robert Koch Institute, Germany

### **Economic Impacts of Financing PVS Gap Analysis**

FRANCK BERTHE

Senior Livestock Specialist, Agriculture Global Practice

The World Bank

### **The Cost of Implementing a One Health Approach to Combat Microbial Threats**

KATHERINE LEE

Assistant Professor, Department of Agricultural Economics and Rural Sociology

University of Idaho

3:00 pm **Q&A Discussion**

3:40 pm **Break**

3:55 pm **Part B: Accelerating Research and Development of Medical Products**

Objectives:

- Present on the opportunities and barriers to discover and develop medical products to prevent and treat infectious diseases, including discussions on manufacturing capacity.
- Examine the role of the private sector and public and private partnerships in the creation of research and development incentives.

*Moderator:* Jami Taylor, Stanton Park Advisors

#### **Panel Discussion:**

PAUL SCHAPER

Executive Director, Global Public Policy

Merck & Co., Inc.

JOANNA WOLKOWSKI

Vice President of Portfolio and Decision Analysis

Pfizer, Inc.

THOMAS CUENI

Director General

International Federation of Pharmaceutical Manufacturers & Associations

JONATHAN KFOURY

Managing Director and Partner

LEK Consulting

## WORKSHOP ON UNDERSTANDING THE ECONOMICS OF MICROBIAL THREATS

- 4:20 pm **Q&A Discussion**
- 5:25 pm **Wrap-up**  
PETER SANDS, *Workshop Chair*  
Executive Director  
The Global Fund to Fight AIDS, Tuberculosis & Malaria
- 5:30pm **Adjourn**
- 5:35pm **Reception**

### DAY 2 – WEDNESDAY, June 13, 2018

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- 8:30 am **Welcome & Recap Day 1**  
PETER SANDS, *Workshop Chair*  
Executive Director  
The Global Fund to Fight AIDS, Tuberculosis & Malaria

### Session III: Investing in Preparedness for Microbial Threats

- 8:40 am **Part A: Investing in Sustainable Solutions**

**Objectives:**

- Examine the role of development assistance on the global response to counter microbial threats.
- Discuss the role of partnerships and multistakeholder investment to ensure supply chain sustainability in resource limited settings.

*Moderator: Anas El Turabi, Harvard University*

**Development Assistance for Health: Economic Perspectives to Counter Microbial Threats**

DEAN JAMISON

Professor Emeritus, Global Health  
University of California, San Francisco

**Overcoming Economic Bottlenecks in Delivering Medical Products to Address Microbial Threats across Africa**

TANIA ZULU HOLT

Partner, Johannesburg  
McKinsey & Company

- 9:05 am **Q&A Discussion**

## WORKSHOP ON UNDERSTANDING THE ECONOMICS OF MICROBIAL THREATS

### 9:25 am **Part B: Breakout Session**

Objectives:

- Discuss strategies to address discrepancies among conceptual models.
- Identify knowledge gaps and research priorities to advance the field.
- Examine strategies to incorporate estimates of infectious disease risk to overall macroeconomic assessments of economic growth to ensure the risks are reflected in financial markets and business investment decisions or influence flows of development assistance, and to link these assessments to incentives for action to minimize the threats.
- Explore effective mechanisms for stimulating meaningful involvement of stakeholders across public health, animal health, economics, travel, trade, commerce, agriculture, among others for combating microbial threats.
- Discuss potential strategies and governance mechanisms to encourage investment on the discovery and development of medical products to address infectious diseases and antimicrobial resistance.

#### **Introduction to Session**

SUERIE MOON

Visiting Lecturer and Director of Research, Global Health Centre  
The Graduate Institute, Geneva

9:30 am (mobilize to breakout rooms)

### 9:35 am **Breakout Session**

The purpose of the breakout session is to identify priority next steps and develop actionable strategies to achieve those next steps across the three topics below.

#### **Group 1: Modeling the Economic Risks of Emerging Infectious Diseases**

*Moderator:* Peter Daszak, EcoHealth Alliance

#### **Group 2: Creating a Sustainable Economic Model to Stimulate Research & Development for Antibiotics**

*Moderator:* Ed Whiting, Wellcome Trust

#### **Group 3: Incentives for National Governments to Invest in Preparedness: Incorporating Economic Risks of Outbreaks into Macroeconomic Assessments**

*Moderator:* Mukesh Chawla, The World Bank

10:50 am **Break**

### 11:10 am **Breakout Group Reports**

Session Moderator: Suerie Moon, The Graduate Institute, Geneva

*Group 1 Moderator:* Peter Daszak

*Group 2 Moderator:* Ed Whiting

*Group 3 Moderator:* Mukesh Chawla

**WORKSHOP ON UNDERSTANDING THE ECONOMICS OF MICROBIAL THREATS**

11:30 am **Synthesis and General Discussion**

12:15 pm **Closing Remarks**

PETER SANDS, *Workshop Chair*

Executive Director

The Global Fund to Fight AIDS, Tuberculosis & Malaria

PETER DASZAK, *Chair of the Forum on Microbial Threats*

President

EcoHealth Alliance

12:30 pm **Adjourn**