

Conference Brief

## Global Health Approach for Infectious Diseases – A Proposal for the Next Decade

### Executive Summary

The German Academy of Sciences Leopoldina, the Academy of Science of South Africa (ASSAf), the Académie Nationale des Sciences et Techniques du Sénégal (ANSTS), and the Ethiopian Academy of Sciences (EAS) jointly hosted a workshop in May 2023 on "Infectious Diseases beyond COVID-19" at the Max Planck Institute for Infection Biology in Berlin, Germany. The objectives of the workshop were to deliberate on the lessons learned from the COVID-19 pandemic and to formulate strategies for enhancing preparedness in the face of both existing and future infectious disease threats, with emphasis on the "One Health" approach and the interplay of climate change. Academia, private enterprises, non-governmental organisations, and political sectors participated in the workshop. Herewith the Conference brief is provided to highlight key recommendations. The speakers of the conference

emphasised the importance of cooperation to achieve the common goal of building a resilient and sustainable future for global health. The urgent need for collaborative efforts and evidence-based policies to address the challenges of current and future infectious disease threats, was highlighted. The recent COVID-19 pandemic served as a stark reminder of the profound and far-reaching consequences that emerging diseases can impose on healthcare systems, economies, and social fabric. The COVID-19 pandemic further elevated the importance of scientific collaboration, innovation, and transdisciplinary approaches to mitigate the effects of infectious diseases. The conference brief strongly advocates for the advancement of global health research, exemplified by greater societal collaboration in data collection and sharing, as well as equitable access to vaccines.

The following action points were recommended to enhance global health security:

1. Preventing Zoonotic Spillover at the Source
2. Strengthening Pandemic Preparedness and Response
3. Advancing Global Health Research through increased Societal Collaboration
4. Enhancing Surveillance and the Sharing of Disease related Data
5. Improving Access to Medicines and Vaccines in Low- and Middle-Income Countries (LMICs)
6. Addressing Disruptions to Tuberculosis (TB) and HIV Services caused by the COVID-19 Pandemic

By fostering partnerships, integrating both global and local knowledge, and investing in research and technology, the global community can strengthen its pandemic preparedness, improve access to medicines, and enhance global health security.

## Preface

The experience of living with and through the recent global COVID-19 pandemic has changed the prevailing perception of COVID-19. What was once regarded as an acute respiratory infection has now evolved into a chronic, multi-system disease, evident in the enduring condition known as Long COVID. The pandemic, moreover, demonstrated that humankind has the capacity to adapt to living smartly with SARS-CoV-2 by minimising risk without drastic public health measures.

Individual countries need to enhance their pandemic preparedness, in conjunction with fostering a coordinated global response. Individual capacity on pandemic preparedness can be furthermore enhanced through international collaboration and seek assistance by global bodies.

Most pandemics<sup>1</sup> have their root causes in zoonoses. The possibility that pathogens spill over from animals to humans increases through the increased human impact on nature and human interference. Preventing such zoonotic spillovers to humans shifts the infectious disease control paradigm from reactive to proactive, i.e., preventing pathogens from transferring from

animals to humans or vice versa. Such a One Health approach requires collaboration and intervention in the public and animal health as well as in the environmental protection sectors.<sup>2</sup>

A pivotal lesson drawn from the recent pandemic is the importance and urgency of a global health approach. Science and public health advocates, like the World Health Organisation (WHO), stress the need for developing and implementing a global health strategy. While the need for such an approach is undisputed, there exists a requirement for elucidating its specific aspects. What would a comprehensive global health approach entail? What precise actions related to One Health, disease prevention, and collaborative research should be incorporated into this global health strategy? From the perspective of the conference participants, a global health approach should involve all relevant stakeholders from national, regional, and global health institutions, research institutions as well as business corporations. A global health approach should entail the following points.

## 1. Preventing of Zoonotic Spillover at the Source

- Understand the link between drivers of spillover and the emergence of infectious disease.
- Enhance capacity building for preventing zoonotic spillover by focusing on the scope of drivers which affect the interaction of humans and wildlife. These drivers can be proximal, like deforestation, or distal, like climate change.
- Improve the spillover literacy through more research on the drivers and the effect of policy and interventions on mitigation. Knowledge can be improved by developing interactive simulation and prediction models for interventions and the efficacy thereof.
- Target interventions and policy to upstream prevention measures that amongst others address factors such as climate change, food production, overcrowding, hygiene and sanitation, waste management, and natural resources utilisation.

## 2. Strengthening Pandemic Preparedness and Response

- Invest in research and development of novel technologies for early detection, monitoring, and prevention of infectious disease threats, prioritising diseases affecting vulnerable populations.

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<sup>1</sup> The conference brief defines the term pandemic according to the criteria of the World Health Organization (WHO) which conceives a disease as a pandemic when it is declared a Public Health Emergency of International Concern (PHEIC) and the disease's geographical and population growth is exponential, cf. World Health Organization (WHO) 2020: Virtual Press Conference on COVID-19, protocol, 11 March 2020.

<sup>2</sup> One Health High-Level Expert Panel (OHHLEP) 2023: Prevention of Zoonotic Spillover, From Relying on Response to Reducing the Risk at Source, OHHLEP whitepaper \*opinionpiece, February 2023.

- Utilise lessons from COVID-19 to integrate digital systems for real-time surveillance, response, and information sharing.
- Foster equitable collaborations and partnerships between countries, as well as academia, and industry to build global health security and future pandemic preparedness.
- Build infrastructure and platforms for manufacturing of novel vaccines, drugs and diagnostics to enable rapid responses to prevent the progression of an outbreak into a pandemic.
- Put pandemic plans in place that include pragmatic, evidence-based procedures for pandemic scenarios for critical infrastructures and non-pharmaceutical interventions to mitigate negative impact.
- Implement realistic scenario-based regional and supra-regional epidemic stress tests of critical infrastructures and establish structures for enhanced pandemic preparedness.

### **3. Advancing Global Health Research through increased Societal Collaboration**

- Facilitate dialogue between researchers and practitioners on the different levels to better align strategies with practical implementation.
- Develop frameworks that address the asymmetry in infectious disease research and funding between African and European partners to foster mutually beneficial collaborations.
- Collaborate with international funding agencies and institutions to support research efforts in infectious diseases and facilitate cross-border research partnerships.
- Promote inclusive and equitable partnerships between researchers from different regions and avoid “science colonialism”.
- Improve public trust through enhanced public engagement in science through better communication about science and the scientific approaches to pandemic preparedness, and data collection particularly for early warning alerts and containing outbreaks.

### **4. Enhancing Surveillance and the Sharing of Disease related Data**

- Develop existing Global Health Hubs, such as the WHO Hub for Pandemic Preparedness or the Global AMR Hub, into a framework of open science global surveillance, particularly with respect to genomic analysis.
- Foster and curate the sharing of data and collaborative efforts among diverse regions to swiftly identify and respond to both emerging and re-emerging infectious diseases, as well as antimicrobial resistance.
- Define a coherent standard for sharing the data and equally protecting the privacy rights is required.
- Integrate surveillance across the biological, environmental, veterinary, social, and medical domains with predictive models and frameworks for early detection and prevention of spillover.
- Develop and integrate technology, including Artificial Intelligence (AI) tools, for novel surveillance and monitoring of indicators that can serve as early warning signals for outbreaks.
- Develop comprehensive public health data platforms that cover One Health events, improving the accuracy and timeliness of disease monitoring and response.

## 5. Improving Access to Medicines and Vaccines in Low- and Middle-Income Countries (LMICs)

- Advocate for increased local manufacturing capacity for essential medicines and vaccines in Africa to reduce dependency on imports and ensure timely access to life-saving pharmaceutical interventions during outbreaks.
- Promote public-private partnerships to facilitate technology transfer and knowledge sharing, enabling LMICs to contribute to the global supply of essential medicines and vaccines.
- Prioritise research and development for infectious diseases affecting underserved populations to address existing healthcare disparities.

## 6. Addressing Disruptions to Tuberculosis (TB) and HIV Services caused by the COVID-19 Pandemic

- National health authorities should urgently repurpose workforce and other resources such as diagnostic equipment, bed space, and funding to reverse the rising incidence of TB caused by disruptions to case notification, diagnosis, and treatment during the COVID-19 response.
- Integrate non-pharmaceutical interventions (NPIs) in household settings to minimise TB transmission risks among patients and their families.
- Ensure strategic communication and collaboration between industry and academia to enhance the development of new technologies for TB and HIV treatment, diagnosis, and prevention.
- Encourage close collaboration between biomedical scientists and public health scientists to understand the magnitude of the impact of global health issues on TB and HIV services in high-burden settings, and to design effective interventions to mitigate such impacts.

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