COVID-19 Research and Innovation
Powering the world’s pandemic response – now and in the future

Global research and Innovation Forum
24th-25th February 2022
The global coordination and support of the world’s leading scientists and experts does not always grab the media headlines.

But it has been key in underpinning the important initiatives and breakthroughs achieved in research and innovation.

Thank you!
WHO R&D Blueprint for epidemics

At the request of its 194 Member States in May 2015, the World Health Organization convened a broad network of experts to develop an R&D Blueprint for Epidemics.

A global strategy and preparedness plan was developed to allow for the rapid activation of research before and during epidemics.
Animal and environmental research on the virus origin

Evaluations on the susceptibility of multiple animal species to SARS-CoV-2 infection.

Investigation of the COVID-19 outbreak in minks informed risk assessment at the global level and supported the development of biosafety guidance.

Immediate sharing facilitated informed decision making during significant events such as the emergence of Omicron or the recent outbreak associated with Syrian hamsters sold as pets.

Studies carried out to explore the risk of transmission along the food chain, including in traditional markets, in a variety of global settings.
Epidemiology of COVID-19

focusing on past and current trends, drivers of transmission and severity, and epidemiological research gaps

Rapid knowledge-sharing via a dashboard that systematically monitors and synthesizes findings of serosurveys around the world, in partnership with SeroTracker

The Solidarity II and the Unity studies facilitate data collection and knowledge share programme on sero-epidemiological studies

Countries have received technical support to build epidemiological capacity, enhance protocol development and statistical analysis.

Equipment for whole-genome sequencing has also been introduced into countries that previously lacked the capacity for such analyses.
A hub for pandemic and epidemic intelligence

To better address pandemic and epidemic risks and to share knowledge with all countries, the WHO Hub for Pandemic and Epidemic Intelligence has been established to strengthen intelligence specifically for pandemics and epidemics by striving for better data, better analytics, and better decisions.
Research on public health and social measures and their impact

New WHO initiative to measure the effectiveness and impact of PHSMs during health emergencies.

Development of a draft logic model on PHSMs to guide research and decision-making.

A global database for primary studies measuring the impact and effectiveness of PHSMs.


Case studies to analyse the implementation challenges and enablers during COVID-19.
IPC research during the pandemic

• Estimating the cost-effectiveness of IPC interventions: a global modelling study conducted by OECD and WHO on interventions aimed at reducing transmission of SARS-CoV-2 among HCWs.

• Improving PPE effectiveness and addressing shortages.

• Identifying the role of the environment in transmission.
Ethics and research

- Developing and contributing to WHO guidance documents and policy briefs on COVID-19
- Informing principles for research in public health emergencies.
- Hosting the WHO Pandemic Ethics & Policy Summit (Dec 2021).
Infodemiology: progressing on the public health research agenda for managing infodemics

Public health research agenda for managing infodemics and joint call for papers on infodemiology.

Establishment of five working areas of collaboration towards measurement of burden of infodemic.

5th WHO infodemic management conference on burden of infodemic measurement.

Trained 750+ infodemic managers from 132 countries in infodemiology and evidence-based approaches to infodemic management.

Development of methods and tools for automated social listening of conversations in social media and other digital public data sources (in development), Field infodemiology guide for field responders.

Evidence mapping and gap analysis reviewing implementation of the public health research agenda, infodemic management frameworks and interventions.

Development of evidence-based scalable social inoculation interventions.
Vaccines: research and development priorities

Criteria for the selection of vaccines for clinical trials and for inclusion in the Solidarity Trial Vaccines.

The Target Product Profile for COVID-19 vaccines being updated.

Broad sharing of experiences and data on the development of immune assays, materials and reagents for the evaluation of immunity to SARS-CoV-2 virus or SARS-CoV-2 vaccines, with general trends observed across many studies.

Animal model research played a chief role in the characterization of the pathogenesis, transmission and immunology of SARS-CoV-2 variants of concern, and important efforts directed to engineer animal models that would mimic these important disease drivers.

Guidance and lessons learned regarding volunteer challenge studies with SARS-CoV-2 updated.

Launch of a large, international, randomized clinical trial platform, the Solidarity Vaccines Trial, in September 2021 in Colombia, Mali and the Philippines with more than 30 research sites.

Safe and effective COVID-19 vaccines have been developed at unprecedented speed with the first vaccinations taking place less than a year after SARS-CoV-2 was identified, thanks to an extensive collaboration and cooperation between multiple stakeholders.
Advancing the COVID-19 clinical care pathway: outbreak research response centered around the patient

Core outcome measures for COVID-19 clinical trials with a minimal Common Outcome Set (COS) for COVID-19 trials,

Model of a prospective meta-analysis to pool grouped data from recently completed and ongoing clinical trials of potential treatments for COVID-19 developed and the process published.

A working group with leadership from LMICs is undertaking a study to determine the best respiratory support approaches to optimize the use of oxygen in LMICs.

The COVID-19 Platform: online data repository of anonymized, individual level clinical data of hospitalized COVID-19 cases to improve the global understanding of the presentation, risk factors, treatments, and outcomes of patients hospitalized with COVID-19


Classification matrix for COVID-19, and safely introducing new therapeutics into clinical practice.
Research and development for treatments of hospitalized patients

The Solidarity Therapeutics Trial generated conclusive evidence on the effectiveness of repurposed drugs for the treatment of COVID-19.

In August 2021, WHO launched Solidarity PLUS, the new and current stage of the trial, which is an unprecedented global collaboration for COVID-19 R&D with thousands of researchers in 52 active countries.

Based on available data, three new drugs - artesunate, imatinib, infliximab – were selected by the WHO Advisory Group on Therapeutics.

Active enrolment in the trial is ongoing and co-sponsorship with participating Member States has been strengthened, by robust collaboration between multiple hospitals in countries around the world.
Critical needs for outpatients and for the design of outpatient therapeutic trials

Facilitation of large-scale collaborations and information sharing, leading to critical decisions, in particular regarding dose selection as well as selection of study arms and evaluation of therapeutic agents as combinations.

Framework for pooled data analysis based on common measures across studies and information about comparable endpoints under development.

Major issues pertinent to the design of outpatient trials and the interpretation and external validity of study outcomes have been identified from discussion sessions.
Social science in outbreak response

Evidence generated on social and behavioral dynamics i.

Informed WHO guidance through integration of evidence from social sciences, global consultation on community centered approaches to health emergencies.

Global and local level analyses and advocacy on the broader impacts of COVID-19.

Development of research protocols, tools, mechanisms and research infrastructure for standardized, systematic collection of data.

Training and capacity development, together with network development and formalization to collect and share data.
Regulatory science and convergence between national regulatory authorities

In 2021, WHO assessed and recommended nine additional COVID-19 vaccines for Emergency Use Listing (EUL) with approval of 25 drug substance and 41 drug product manufacturing sites and evaluation of over 200 post-EUL changes.

Assisted 40 self-benchmarking and completed five formal benchmarking (GBT) of regulatory systems, with follow up of 11 NRAs on the implementation status of institutional development plans and provided technical support to over 15 NRAs, issued 4 global medical products Alerts.
WHO International Units: A common language in evaluation of the immune response to vaccines

1st WHO International Standard and Reference Panel for the anti-SARSCoV-2 antibody were established by the WHO Expert Committee on Biological Standardization

1st WHO International Standard for SARS-CoV-2 RNA was established by the WHO ECBS
Governments and international community needs to work together to be better prepared

WHO has defined as a priority to harness the power of science, research innovation, data and digital technologies as critical enablers of the other priorities – for health promotion and disease prevention, for early diagnosis and case management, and for the prevention, early detection, and rapid response to epidemics and pandemics.

The World Health Assembly agreed on December 2021 to launch negotiations for an agreement to fight pandemics. The 194 Member States of the World Health Organization reached a consensus to kickstart the process to draft and negotiate a convention, agreement or other international instrument under the Constitution of the World Health Organization to strengthen pandemic prevention, preparedness and response.
Registered researchers across the globe working to combat COVID-19

Over 5,000 researchers from 171 countries are now registered / collaborating to implement COVID-19 R&D.

Number of Researchers

- ≥ 50
- >25 and < 50
- >10 and < 25
- >1 and < 10
- ≤ 1

Low-income

Lower middle-income

Global research and Innovation Forum
24th-25th February 2022
Thank you