

Global Health Summit

21 May 2021 | Rome



Science and Innovation for a Safer World

Report of the Global Health Summit Scientific Expert Panel

For well over a year, the world has confronted a devastating COVID-19 pandemic, which is far from over. The crisis has painfully exposed major fragilities in the world's capacity to prevent and respond to health emergencies. The global community had collectively failed to take the well-known threat of epidemics seriously.

More than ever before, we must rely on science to inform and accelerate effective action to control the acute stage of the pandemic while preparing for the probability that SARS-CoV-2 will become endemic. It is also essential to adopt a long-term view to better prepare for and respond to future health threats.

We therefore welcome the decision of European Commission President von der Leyen and Italian Prime Minister Draghi to convene a Scientific Expert Panel to inform deliberations at the Global Health Summit and the Rome Declaration. Bringing together the diverse expertise of 26 eminent scientific leaders worldwide, the Panel was asked to describe the characteristics of effective systems for health threat prevention, preparedness and response.

We outline our vision for a future in which science and scientific institutions are the driving forces behind a global preparedness and response system grounded in the principles of scientific inquiry, equity, multilateralism, solidarity, sustainability, transparency, and cooperation.

We chart a path forward by identifying priority areas for immediate action: global equitable access to health supplies and medical tools against COVID-19 and other health threats, research and innovation, involvement of research groups in low- and middle-income countries (LMIC), integrated disease surveillance and data sharing, science advice, health workforce and systems strengthening, regional manufacturing capacities, public trust, well-coordinated governance and financing, and sustainable health.

The COVID-19 pandemic will not be over anywhere, until it is over everywhere.

A rare silver lining in the crisis has been the extraordinary scientific advancements that have saved lives and livelihoods. We must now seize the momentum to ensure these innovations benefit our global society – including accelerating now equitable access to medical tools as public goods – and help create a healthier, safer, more equitable world.

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I. Context

The Global Health Summit Scientific Expert Panel, established by the European Commission and the Italian G20 Presidency, gathers senior scientific experts experienced in COVID-19 responses and policy advice at the highest levels, and represents broad geographical and disciplinary scopes (see annex for membership). The Panel members – who participate in their personal capacities – met twice by videoconference, 8 April 2021 and 5 May 2021. This report summarises the Panel’s key findings.

II. Likely Evolution of the COVID-19 Pandemic

Leaders and societies must urgently control the acute pandemic, while adopting a long-term view and paving the way for future preparedness and response.

Most countries are still in an acute phase of the pandemic, with a huge death toll and societal hardship. The effectiveness of national COVID-19 responses has been very unequal, with some countries at least provisionally suppressing the virus and others experiencing escalating epidemics with tragic consequences. Overall, proactive public health measures and political decisions informed by science have shaped effective responses.

Thanks to unprecedented scientific advancements and international collaboration, the growing availability of safe and effective vaccines gives hope to gradually bring the pandemic under control with very low mortality. However, the probable trajectory is for SARS-CoV-2 to become endemic, with seasonal outbreaks because of waning immunity, insufficient vaccination coverage globally, and/or the emergence of new viral variants, which are not controlled by current vaccines. Additional epidemic waves are likely, particularly in countries with low vaccination coverage.

Global vaccine equity – and crucially widespread acceptance and efficient deployment – is both a moral imperative and critical for pandemic control. No country is safe unless all countries are safe. Inequitable access will not only lead to preventable mortality and suffering in an even more fragmented world but also hamper critical control efforts globally. High levels of infection are a breeding ground for the emergence of viral mutations, which may lead to “immune escape variants” resistant to current vaccines and antibody-based therapeutics.

Even with a high vaccination coverage in a growing number of countries, there is a continuing need for non-pharmaceutical interventions to avoid outbreaks until sufficiently high levels of immunisation are reached globally, and it becomes clearer how effective all vaccines are in preventing viral transmission. The future of the pandemic will also depend on how effectively and rapidly countries can control even small outbreaks.

There will probably be a need for booster vaccinations, possibly with next generation vaccines, because of variants of concern and possibly waning immunity, particularly in the elderly, as well as ultimately a need for vaccination of children. Supply issues must be solved not only for the manufacturing of vaccines, but for other medicinal products and devices because of spill-over effects as scarce materials are consumed for vaccine

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production. In addition, care for millions of people with post-acute sequelae of COVID-19, or “long COVID”, will be needed.

It is likely that alongside the health impact, the socioeconomic and geopolitical consequences, will be felt for many years in numerous societies. It is also crucial to mitigate the impact of COVID-19 on other health issues, including infectious diseases, child immunisation, chronic conditions, and mental health.

The pandemic has also exposed and exacerbated gender, racial, and socioeconomic inequalities within and between countries, and evidence shows that tackling COVID-19 and future threats requires addressing socioeconomic factors as primary drivers of health outcomes. The burdens carried by women, for example, have escalated during the pandemic, as they have taken up caretaking, community and home-schooling responsibilities, often without the alleviation of their professional activities, or resulting in income-reduction or job-loss. There has also been an increase in gender-based violence. All public health initiatives should consider geography, gender, race, age, and socio-economic dimensions with particular attention to the most vulnerable groups, in order to ensure truly equitable responses based on health need, which will ultimately benefit everyone both in peacetime and in crises.

III. Future epidemic threats

Efforts today to address COVID-19 should include investments and response measures that have the greatest potential for sustainably improved global health threat prevention, preparedness and response as the world is likely entering an “age of pandemics”.

Pathogens may be newly emerging, re-emerging or resurging, for example due to acquired resistance to treatment or inadequate vaccination coverage. The growing wave of vaccine hesitancy, declining vaccination uptake in many settings and increasing antimicrobial resistance are extremely concerning.

Most human infectious diseases, including COVID-19, are zoonotic, i.e. caused by pathogens that are derived from animals and transmitted to humans. Their emergence is typically driven by human activities, including deforestation and other changes to land use (e.g. for construction or intensive crop and livestock farming), wildlife exploitation, as well as increased meat consumption, urbanisation, and mobility with globalised trade, travel and migration, and in the case of antimicrobial resistance by misuse of antibiotics. Vector-borne diseases are caused by pathogens that are transmitted by other living organisms, particularly blood-sucking insects such as mosquitoes.

Outbreaks of infectious diseases, in particular zoonoses and vector-borne diseases, have risen over time and are expected to increasingly emerge as climate change worsens. The frequency and nature of future epidemics will thus strongly depend on our ability to limit and reverse environmental damage and to adopt more sustainable ways of living (see recommendation 10).



IV. Key recommendations

Based on the principles of scientific enquiry, equity, multilateralism, solidarity, sustainability, transparency, cooperation, and evidence-informed and cross-sector approaches, the Panel calls for the following urgent actions:

1. End the acute stage of the pandemic and leave no one behind: Ensure equitable access to medical tools to fight COVID-19

The scientific consensus is that SARS-CoV-2 will likely become endemic. Not only will it not be eradicated in the near future, the situation is currently worsening in many regions. Without urgent worldwide actions and an immediate surge response, there is no end in sight. The biggest problem is insufficient and inequitable access to vaccines. In view of the current developments including the rapid and wide spread of new variants, high vaccination levels - 70% of the population and higher - are required.

- a. Ensure **access to vaccines, and other medical tools such as diagnostics, medicines and oxygen to fight COVID-19 for all as the top priority.**
- b. Mobilizing the necessary **funding** to close the financing gap of the Access to COVID-19 Tools Accelerator (**ACT-A**)/**COVAX** and commitment by high-income countries to **share** large numbers of vaccines within the next few months.
- c. Establish and adhere to evidence-informed rules for stepwise adjustment of measures.
Reinforce the maintenance of **non-pharmaceutical interventions** with testing, vaccination and treatment as long as vaccination coverage is insufficient.
- d. Accelerate the **development of next generation vaccines**, including for variants in the shortest possible time.
- e. Advance the **development of safe and effective therapeutics** for all stages of the disease, including 'long COVID'.
- f. **Evaluate context-specific interventions and tailored policies** for gradual easing of public health restrictions.
- g. Gain a deeper **understanding of SARS-CoV-2, its origins and causes.**
- h. Invest in strengthened laboratory capacities globally to scale up **genomic surveillance and data sharing** to identify variants and develop a transparent and accessible repository for proactive analysis of viral evolution and testing to determine likelihood of immune escape.
- i. Prevent the **reintroduction of SARS-CoV-2 and eventual variants between animals and humans.**

2. Invest in scientific research & development before, during, and in between health crises

Research and innovation have been one of the few bright spots in the COVID-19 response. Academic and industrial efforts, and international collaboration and transparency in this area have resulted in unprecedented advancements in record time, foremost with the development of safe and effective vaccines, diagnostics and to a lesser extent therapeutics.

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However, in the absence of global entities with suitable mandates, financing arrangements or abilities to coordinate multiple independent actors, there was no global strategy at the outset of the crisis to optimize and coordinate research and development (R&D) efforts.

- a. Establish an efficient and effective **end-to-end R&D ecosystem**.
 - b. Accelerate research on **easily deployable and affordable innovative therapeutic, vaccine and diagnostic technologies and platforms**, including the establishment of an open-source library of phase 2 ready drugs with broad cross-reactivity across major virus groups of pandemic concern, and a pipeline of just-in-case vaccines and monoclonal antibodies that target World Health Organization (WHO) priority pathogens, as well as through supporting novel adjuvant discovery, lowering the costs of monoclonal antibody production, improving mRNA thermostability, and reducing costs of goods sold. An immediate **high priority** is the **rapid development of vaccines effective against all relevant viral variants, and a universal coronavirus vaccine**.
 - c. Increase **investments in basic research** to prepare the ground for the development of tools to ensure rapid future response and innovation.
 - d. Establish **large, pragmatic, collaborative clinical trials networks and protocols**, globally and regionally, for therapeutics and vaccines.
 - e. Ensure **early support by regulatory authorities** for clinical trials to enable speedy approval of safe and effective products.
 - f. Invest in **cross-disciplinary research**, including risk communication, implementation science for more effective public health measures, as well as social and behavioural research on, for example, the effectiveness and impact of non-pharmaceutical interventions.
 - g. Invest in **digital innovation and infrastructure, data science, artificial intelligence, and modelling and forecasting**.
3. **Actively and genuinely involve research groups in low- and middle-income countries**

The present pandemic underlines the urgent need for bringing together researchers and developers from all countries, to benefit from the diverse experience gained in different contexts, to ensure that the scientific outputs are relevant for and accessible in the countries in which they will be implemented, and to improve the coherence of the research response affecting all countries. For example, it is crucial to conduct clinical trials of medical products in a diversity of populations where products proven safe and effective will be rolled out.

- a. Strengthen **collaborative research networks** regionally and globally.
- b. Increase **funding for equitable research partnerships**.
- c. Strengthen **institutional and human health research capacities in LMICs**.
- d. Sustainably **finance and ensure research continuity**, particularly in times of crisis.
- e. Facilitate **biotechnology entrepreneurship and innovation** as part of an end-to-end R&D ecosystem.

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4. Strengthen integrated disease surveillance, data collection, analysis and sharing at all levels

COVID-19 reinforced the critical need for early and reliable information on emerging outbreaks, as well as for continuous coordination and collaboration between countries and regions, including at institutional level, in disease surveillance and data exchange – to increase the chance of preventing the next inevitable outbreak from becoming a pandemic.

- a. Strengthen **country capacities for data collection and analysis** including through genome sequencing for early detection, pathogen characterisation, surveillance of pathogen spread, and assessment of disease dynamics.
- b. Develop **well-funded and coordinated global and regional networks for pathogen surveillance**, underpinned by a common set of principles for data sharing.
- c. Improve the standardisation and validation of **tests and assays**, the comparability, sharing and interoperability of accessible digital data, and quality assurance.
- d. Establish **universally accessible sample collection capacities** (repositories).
- e. Invest in **surveillance of animal, human and environmental settings** to detect rapidly zoonotic pathogens with pandemic potential.
- f. Strengthen **early identification of ‘hotspots’** to detect and respond to outbreaks.
- g. Promote **transparent and rapid sharing of data and information** on outbreaks and other health issues.

5. Strengthen and protect science advice

Scientific advice to policymakers may always be challenging, even more so in pandemic situations when there are major uncertainties, knowledge is fast evolving, risks are large, and evidence is preliminary and limited. Nevertheless, evidence from science is crucial to help develop sound public health policy and mitigation measures.

- a. Ensure **independence of experts and government advisory bodies, and safeguard against the politicisation of science**.
- b. Clarify **boundaries between science, scientific advice, and politics** including a transparent definition and demarcation of advisory versus decision-making roles, together with clear responsibilities for communications.
- c. Strengthen **mechanisms for rapid advice and evidence-informed decision-making** in times of crisis to reduce as much as possible delays between scientific information and decision-making.
- d. Enable an **open dialogue between the public, scientific experts, and authorities**, including about uncertainties and disagreements between decision makers and scientists, as well as among scientists themselves; provide clarity about what is known, partially known, unknown, and unknowable.
- e. **Communicate transparently with the public** when **policy decisions deviate from science advice** because of the consideration of other factors important to society.
- f. Address **anti-science and vaccine hesitancy movements, for example by promoting science literacy**.



6. Be ready for the next health crisis: invest in standing systems and workforce for preparedness and response

Strong health systems and human capital are the first line of defence against endemic health problems as well as epidemics, and preparedness and response should be core functions. Some countries, particularly in East and South East Asia and Oceania, managed to control provisionally their COVID epidemics, because of strong institutions developed partly following their experience with SARS and due to extensive testing and tracing, combined with quarantine and isolation, while regions like Latin America have been severely affected.

A key determinant of successful responses is a combination of strong existing systems for whole-of-government coordination, and political leadership at the highest level making early, evidence-informed decisions. In contrast, in many countries proactive leadership was severely lacking and/or public health institutions were weak and ill-equipped and/ or deployment of testing was slow causing insufficient and/or delayed response. Many countries also continue to suffer from severe shortages in capacities, including in health care professionals, hospital beds, intensive care units, personal protective equipment, medicinal products and devices, diagnostics, laboratory material and oxygen, sometimes aggravated by closure of borders and rupture of global supply chains.

- a. Establish a national **standing multisectoral and multidisciplinary system** and governance with strong leadership at the highest level, which can be activated instantly during a health crisis to enable the rapid mobilization of surge capacity while preserving continuity of essential health services.
- b. Build on **existing public health platforms and systems**; empower national and regional public health institutions with the legal mandate, technical capacity, and financial resources for effective response and networking. Establish new ones where gaps remain, particularly at the regional level (e.g. building on the example of Africa Centres for Disease Control and Prevention).
- c. Undertake massive efforts to **boost capacity and sustain a well-supported workforce** in areas such as public health, epidemiology, health care professionals, sequencing, data storage and analysis, and crisis management.
- d. **Develop and/or deploy educational tools and initiatives** to fill knowledge gaps, improve skills, and attitudes among the public health workforce in all countries to face future pandemics; support training programmes for standardized competencies through learning platforms tailored to multiple audiences (Ministers, senior officials, public health practitioners, etc.).
- e. Conduct regular **active simulation exercises at all levels and across sectors** to improve response in between crises.
- f. Develop **rapid and reliable testing and tracing systems** combined with suitable means for isolation and quarantine.
- g. Improve **supply chain systems and ensure sufficient stockpiles** for responding to health crises, including both pandemic-focused tools and critical commodities for basic care like essential medicines and oxygen.
- h. Strengthen flexible and efficient mechanisms to address **ethical issues** during crises.

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7. Strengthen regional manufacturing capacities and hubs

Insufficient manufacturing capacity has been a major constraint in producing COVID-19 vaccines. It is critical to immediately invest in manufacturing capacity globally to decentralise production of vaccines and other medicinal products for permanent use and, crucially, in times of crisis. Significant investment, particularly through public-private cooperation, is needed to scale up long-term manufacturing capacity in all regions and to lower costs of novel technologies. This will also help accelerate equitable access to medicinal products through increased production, diversity and autonomy.

- a. Fund and establish a network of ever-warm **regional manufacturing hubs for vaccines and biologics** where they do not exist yet, such as in Africa or Latin America, in configurations that are flexible, mitigate geopolitical supply risks and are sustainable in non-pandemic times, to be used, for example, to produce tools against prevalent infectious diseases.
- b. Establish **novel development and manufacturing platforms** that can be readily adapted to various pathogens - ideally using diverse technologies to increase the likelihood of success and to be tested against 'prototype pathogens' from various viral families.
- c. Develop **suitable voluntary licensing, patent and technology transfer models and strengthen capacity** for decentralised production of vaccines and therapeutics in public health emergencies.

8. Empower and earn trust of people

Compliance with risk mitigation measures during health emergencies is strongly affected by people's trust in public authorities and science. Community trust is built over many years, and success in doing so has varied considerably among societies and over time. Moreover, COVID-19 has fuelled an infodemic, including the viral spread of misinformation and rumours, hampering effective public health responses in many settings, including vaccination campaigns. Community engagement, including listening to and addressing public concerns, is key. Global solidarity in ensuring people can equitably benefit from scientific discoveries is also critical to fostering trust in science and innovation.

- a. **Empower and involve citizens and communities in preparedness and response** for improved measures and policies, as well as increased trust, ownership, and acceptance.
- b. Address the growing pandemic of **vaccine hesitancy** including through partnerships with popular and social media.
- c. **Advance equity** including **gender equality** as a central principle in public health campaigns.
- d. Strengthen the **social sciences evidence** base for building trust and effective communications.
- e. Invest in **effective risk communication and tackling disinformation**.

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- f. Promote **science communications and scientists' engagement with the public**, including through social and traditional media, and cooperation with journalists.

9. **Collaborate & coordinate at all levels: strengthen relevant governance structures and leadership, and ensure adequate financing**

While the WHO has played a central role during the COVID-19 pandemic, the crisis has highlighted major gaps in global leadership and governance of health emergencies. Pandemic preparedness and response demand early collective action across sectors and countries both at the regional and global level. In some parts of the world, cooperation helped address the most pressing problems such as shortages of medical and personal protective equipment, medicinal products, laboratory supplies and health workers. ACT -A is one clear example of a new mechanism for international collaboration to ensure the development of and equitable access to vaccines, diagnostics, and therapeutics.

- a. Develop a **global standing mechanism for improved multisectoral pandemic coordination** to be activated in times of crisis.
- b. Implement **nimble, multisector, global and regional plans for better preparedness and response** based on function, form and finance, including the prioritisation of immediate, medium- and longer-term goals.
- c. **Empower WHO** with a focus on core tasks, and **regional public health institutions**.
- d. Implement the recommendations of the **Independent Panel for Pandemic Preparedness and Response** and other efforts.
- e. Reform the **International Health Regulations** to be more flexible and responsive.
- f. Implement the recommendations of the **G20 High-Level Independent Panel on Financing the Global Commons for Pandemic Preparedness and Response**.
- g. **Strengthen global coordination and harmonisation between regulatory authorities**, including for timely approaches to assessing and approving modified vaccines against variants.
- h. Support and amplify the **Coalition for Epidemic Preparedness Innovations (CEPI)** as an effective multilateral mechanism and expand its scope and mandate.
- i. Strengthen, maintain, and increase funding for **ACT-ACOVAX**.
- j. Develop an independent **global monitoring framework** to assess global risks and global preparedness, and use validated methods to assess country preparedness capacities, as current indicators proved not predictive.

10. **Address the problem at the root: Reduce risks through more sustainable ways of living**

COVID-19 and previous epidemics have shown that health threats can trigger major socioeconomic crises and exacerbate inequalities. In general, people living in poor conditions are more likely to become infected, develop the disease and to have an unfavourable health outcome. Moreover, such existential health threats must be seen in the context of the climate crisis, environmental damage and unsustainable ways of living, including the extensive use of antimicrobials leading to antimicrobial resistance.

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- a. Invest in **prevention and health promotion** (upstream measures).
- b. Address the links between **health and environmental degradation** from a '**planetary health**' perspective; devise new and update existing policies in related fields, such as environmental protection, food, transport, and urban planning.
- c. Implement the **Sustainable Development Goals**, and address links between health crises, wider social determinants of health, poverty and structural inequalities, which express themselves in 'syndemic pandemics'.
- d. Promote and adopt a **One Health approach**.

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ANNEX

Panel of Scientific Experts

Established by the European Commission and the Italian G20 Presidency, to inform Leaders' deliberations at the Global Health Summit, 21 May 2021.

Organizing co-chairs

Professor Peter Piot, Special advisor to the European Commission President U. von der Leyen and Director of the London School of Hygiene & Tropical Medicine.

Professor Silvio Brusaferrò, President of the Italian National Institute of Health.

Co-chairs

Dr Victor Dzau, President of the United States National Academy of Medicine.

Professor Yee-Sin Leo, Director of the National Centre for Infectious Diseases in Singapore.

Dr John Nkengasong, Director of the Africa Centers for Disease Control and Prevention.

Members

Dr. Andrea Ammon, Director of the European Centre for Disease Prevention and Control (ECDC), Germany.

Dr. Abdullah Assiri, Assistant Deputy Minister for Preventive Services, Saudi Ministry of Health, Saudi Arabia.

Dr. Maha Barakat, Director-General of Fakhr Al Watan Office (Frontline Heroes Office), United Arab Emirates.

Professor Mark Dybul, Co-Director of the Centre for global health practice and impact, Georgetown; and member of Independent Panel for Pandemic Preparedness and Response, USA.

Dr Jeremy Farrar, Director of the Wellcome Trust, and member of the UK government's Scientific Advisory Group for Emergencies (SAGE), the UK Vaccine Taskforce and the Principles Group of the ACTAccelerator hosted by the World Health Organization (WHO), and chair of the WHO R&D Blueprint Advisory Group, United Kingdom.

Professor Arnaud Fontanet, Member of the French COVID-19 scientific council and Director at the Institut Pasteur, France.

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Professor George Gao, Director-General of the Chinese Center for Disease Control and Prevention, China.

Professor Patricia Garcia, Professor at the School of Public Health at Cayetano Heredia University (UPCH) in Lima, Peru. Former Minister of Health of Peru, Dean of the School of Public Health at UPCH, and former Chief of the Peruvian National Institute of Health (INS), Peru.

Professor Catherine Hankins, Co-Chair of Canada's COVID-19 Immunity Task Force and Deputy Director Science at the Amsterdam Institute for Global Health and Development, Department of Global Health, University of Amsterdam, and Professor of Public and Population Health, Faculty of Medicine, McGill University, Montreal, Canada.

Professor Mlisana Kholeka, Co-chair of the ministerial advisory committee (MAC) on COVID-19, South Africa.

Dr. Trevor Mundel, President of the Bill and Melinda Gates Global Health Program, USA.

Dr. Ayoade Olatunbosun-Alakija, Co-Chair of the African Union Africa Vaccine Delivery Alliance for COVID-19, Nigeria.

Professor Giorgio Palù, Chairperson of the Italian Medicine Agency, Italy.

Professor Amadou Sall, Director of the Institut Pasteur in Dakar, Senegal.

Dr. Soumya Swaminathan, Chief Scientist at the World Health Organisation (WHO).

Dr. Camilla Stoltenberg, Director-General of the Norwegian Institute of Public Health, Norway.

Professor Krishnaswamy VijayRaghavan, Principal Scientific Advisor to the Government of India and member of the Global Preparedness Monitoring Board (GPMB), India

Dr. Takaji Wakita, Director-General of the National Institute of Infectious Disease, Japan.

Professor Lothar Wieler, President of the Robert Koch Institute, Berlin, Germany.

Dr. Mitchell Wolfe, Chief Medical Officer of the Centers for Disease Control and Prevention, USA.

Dr. Wu Zunyou, Chief Epidemiologist with Chinese Center for Disease Control and Prevention, China.