DRAFT FOR CONSULTATION
JUNE 2022

10 proposals to build a safer world together

Strengthening the Global Architecture for Health Emergency Preparedness, Response and Resilience

World Health Organization

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Cover photo: WHO is reaching the most vulnerable people in 15 African countries, including South Sudan, who are facing humanitarian situations such as drought, natural disasters and displacement. © WHO

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Foreword from the Director-General

The COVID-19 pandemic has revealed deep flaws in the world's defences against health emergencies, exposed and exacerbated profound inequities within and between countries, and eroded trust in governments and institutions.

The world was, and remains, unprepared for large-scale health emergencies. But this lesson is not a new one. For decades the emergence of new epidemic-prone diseases, conflicts, and other humanitarian emergencies has caused global panic and alarm, followed by neglect and underinvestment in health emergency preparedness, prevention and response as public and political attention wanes.

Three interlinked priorities are key to the renewal and recovery of national and global health systems that we need to break the cycle of panic and neglect, improve population health, and make countries better prepared for and more resilient against future health emergencies.

We must tackle the root causes of disease and ill-health; we must reorient health systems towards primary health care and universal health coverage; and we must rapidly strengthen the global architecture for health emergency preparedness and response. This white paper presents WHO's proposals for how we can achieve this third priority together.

In response to a request at our Executive Board, and in consultation with Member States and other stakeholders, we set out ten proposals for a stronger global health security architecture, based on the principles of equity, inclusivity, and coherence. The proposals build on the more than 300 recommendations from the various independent reviews of the global response to COVID-19, and reports into previous outbreaks.

We call for stronger governance that is coherent, inclusive and accountable; stronger systems and tools to prevent, detect and respond rapidly to health emergencies; stronger financing, domestically and internationally; and a stronger, empowered and sustainably financed WHO at the centre of the global health security architecture.

Finally, to be able to implement these proposals effectively, we need a new international accord, which WHO's Member States are now negotiating. Since the Second World War, countries have entered into treaties on tobacco, nuclear, chemical and biological weapons, climate change and many other threats to our shared security and well-being. It is common sense now for countries to agree on a common approach to common threats, with common rules for a common response to health emergencies.

The COVID-19 pandemic has taught us all many painful lessons. The greatest tragedy would be not to learn them. Now is the time to make the bold changes that must be made to keep future generations safer.

Dr Tedros Adhanom Ghebreyesus
WHO Director-General

Executive summary

The coronavirus disease (COVID-19) pandemic continues to highlight the need for a stronger, inclusive, equitable and coherent health emergency preparedness, response, and resilience (HEPR) architecture.

Building on the work of numerous reviews, panels, and consultations, this White Paper outlines the Director-General's 10 proposals to strengthen HEPR under the aegis of a new overarching Pandemic Accord that is currently under negotiation. The recommendations are grouped by the three main constituents of the global pandemic architecture.

Governance

1. Establish a Global Health Emergency Council and Committee on Health Emergencies for the World Health Assembly
2. Make targeted amendments to the International Health Regulations (2005)
3. Scale-up Universal Health and Preparedness Reviews and strengthen independent monitoring

Systems

4. Strengthen global health emergency alert and response teams that are trained to common standards, interoperable, rapidly deployable, scalable and equipped
5. Strengthen health emergency coordination through standardized approaches to strategic planning, financing, operations and monitoring of health emergency preparedness and response
6. Expand partnerships and strengthen networks for a whole-of-society approach to collaborative surveillance, community protection, clinical care, and access to countermeasures

Financing

7. Establish a coordinating platform for financing to promote domestic investment and direct existing and gap-filling international financing to where it is needed most
8. Establish a financial intermediary fund for pandemic preparedness and response to provide catalytic and gap-filling funding
9. Expand the WHO Contingency Fund for Emergencies to ensure rapidly scalable financing for response
10. Strengthen WHO at the centre of the global HEPR architecture

The Director-General's proposals are designed to support and contribute to decision-making in the various fora within and beyond WHO that will determine the future global architecture of HEPR.

The Secretariat welcomes comments from Member States and partners on these proposals through informal consultations and feedback in writing.

Introduction

The doctors were unable to cope, since they were treating the disease for the first time and in ignorance: indeed, the more they came into contact with sufferers, the more liable they were to lose their own lives. No other device of men was any help. Moreover, supplication at sanctuaries, resort to divination, and the like were all unavailing. In the end, people were overwhelmed by the disaster and abandoned efforts against it. … I shall give a statement of what it was like, which people can study in case it should ever attack again, to equip themselves with foreknowledge so that they shall not fail to recognize it. I can give this account because I both suffered the disease myself and saw other victims of it.

This is the description of the plague of Athens in 430 BCE, as told by the ancient Greek historian Thucydides in his History of the Peloponnesian War. Almost two-and-a-half millennia later, the coronavirus disease (COVID-19) pandemic has demonstrated that although much has changed, much has not.

At the time of writing, almost 6.3 million deaths have been reported to WHO, but the true toll is much higher. Health systems have been overwhelmed, and many health workers have lost their lives or left their jobs because of burnout, stress and anxiety. The global economy was plunged into its deepest recession since the Second World War, forcing 135 million people into poverty. Widespread misinformation and disinformation have caused confusion and distrust, dividing families, communities and societies.

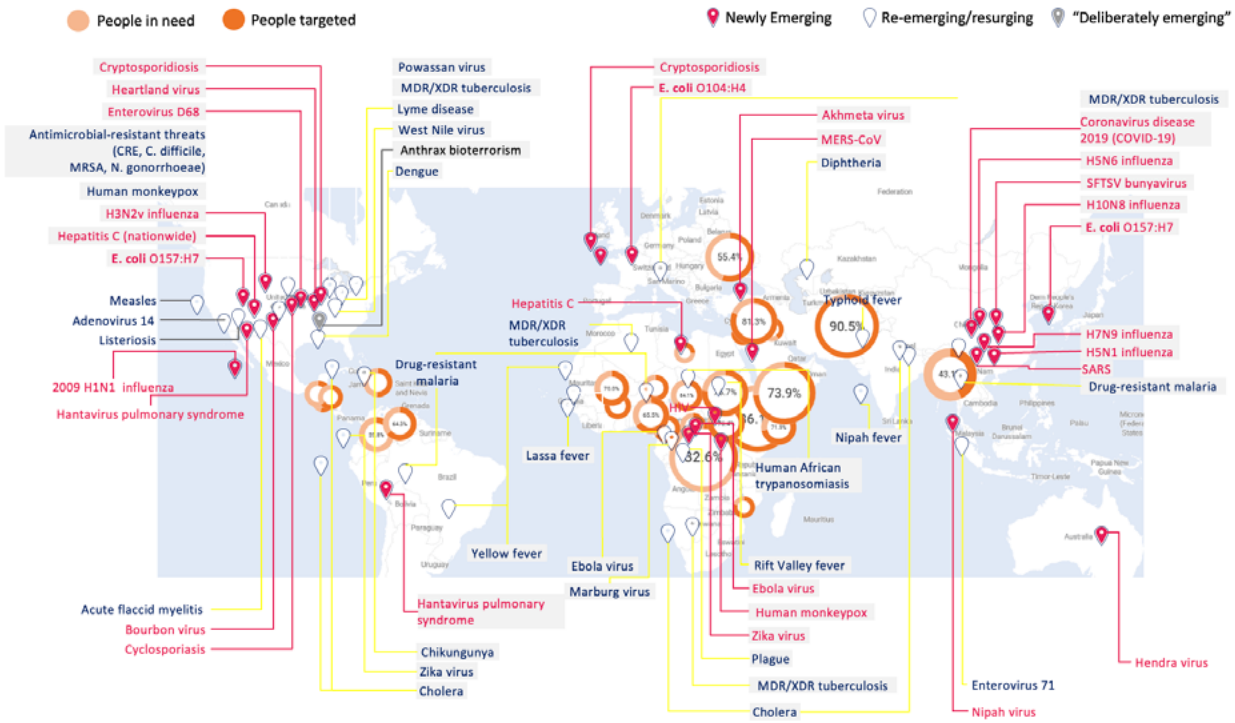
The pandemic has exposed divisions and inequities within and between countries, and gaps in the world's ability to prepare for, prevent, detect and respond rapidly to epidemics, pandemics and other health emergencies. COVID-19 hit the poor and vulnerable hardest, while reminding even the most privileged that infectious diseases still have the power to upend not only health systems, but also societies and economies.

The risk of new health emergencies continues to increase, driven by the escalating climate crisis, environmental degradation, and increasing geo-political instability, disproportionately impacting the poor and most vulnerable (Figure 1). Humanitarian crises affected 300 million people in 2022, putting them at an increased risk of the health emergencies that inevitably follow.

The overall lesson is clear: the world is not prepared. This lesson is not a new one. Just this century, epidemics of SARS, H5N1, H1N1, MERS, Ebola and Zika have emerged, only to be followed by a pattern of panic and neglect, in which concern during emergencies gives way to apathy and underinvestment in their aftermath.

Thucydides wrote his account of the Plague of Athens so that future generations might avoid the suffering he experienced. While COVID-19 has taken so much, it has also given us the opportunity to learn the painful lessons it has taught us, and use them to build a healthier, safer, fairer world for the generations to come. We must seize that opportunity before the world moves on to other priorities.

Figure 1: Scale of health emergencies from all hazards (2021/2022)



Purpose of the white paper

There have been many expert reviews of the HEPR architecture and the global response to the COVID-19 pandemic, yielding more than 300 recommendations that have been analysed and discussed through multiple international processes (Figure 2). The quality of contributions to these reviews reflects the depth of thought, expertise and engagement of a broad spectrum of stakeholders. Maintaining this engagement and strengthening the links between stakeholders will be a crucial determinant of the success of an agile, responsive and flexible HEPR architecture in the future.

Building on the work done to date, this white paper outlines the Director-General's 10 proposals to strengthen HEPR under the aegis of a new overarching pandemic accord, which is currently being developed by the Intergovernmental Negotiating Body to draft and negotiate a WHO convention, agreement or other international instrument on pandemic prevention, preparedness and response.

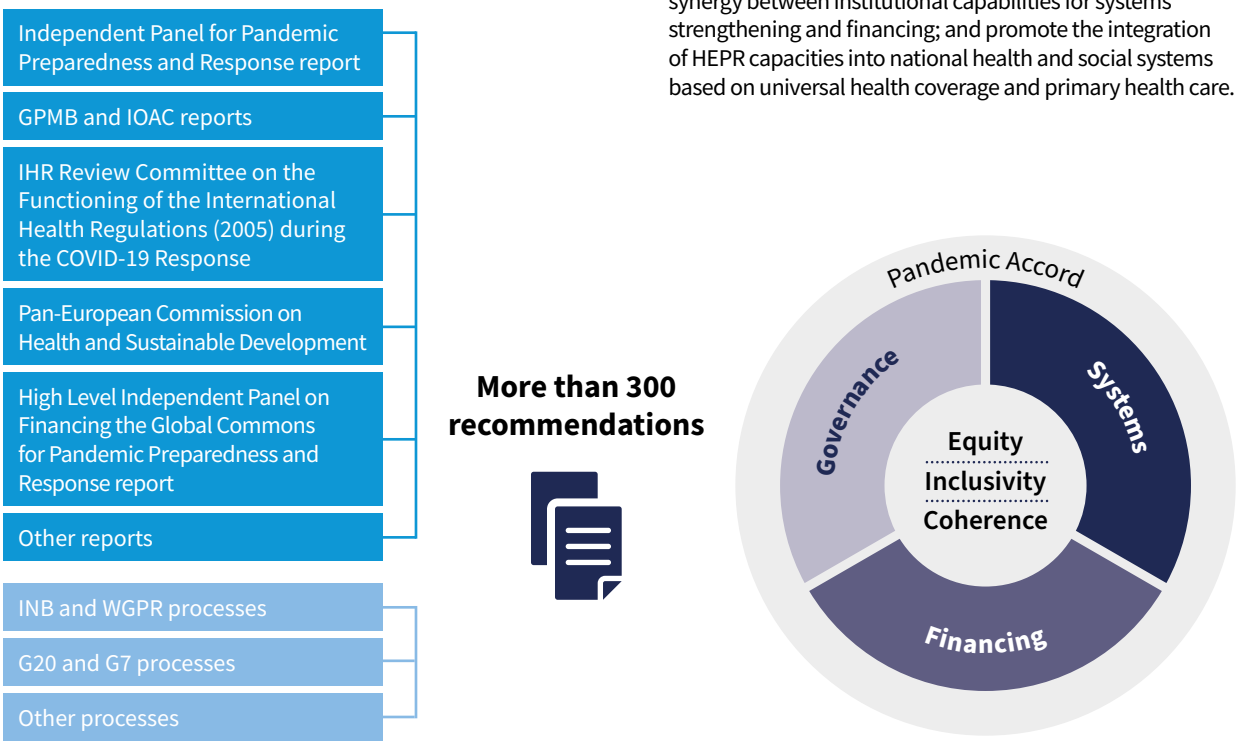
The proposals focus on the architecture that will be needed to ensure a significantly more prepared world, and may need to be adapted for specific threats and contexts. The proposals do not attempt to assign roles and responsibilities within that architecture. The capabilities and partnerships developed during the response to COVID-19 will contribute to achieving this ambitious agenda, and WHO will continue to engage with others in determining wider roles and responsibilities.

Many of the proposals below are designed to build on, complement and strengthen existing frameworks and capacities established after previous crises, strengthening the bonds between global health partners. Other proposals build on new and innovative mechanisms put in place during the COVID-19 pandemic to fill critical gaps. In many cases, these initiatives now need to be adapted and refined according to the lessons of the pandemic in consultation with Member States and partners. A small number of proposals call for the establishment of new mechanisms or structures that are currently being discussed in ongoing Member State processes.

The proposals are grouped by the three main pillars of the global HEPR architecture: governance, systems and financing, and are based on three key principles.

- They must promote **equity**, with no one left behind – equity is both a principle and a goal, to protect the most vulnerable.
- They should promote an HEPR architecture that is **inclusive**, with the engagement and ownership of all countries, communities and stakeholders from across the One Health spectrum. Commitment to diversity, equity and inclusivity is key to effective HEPR at all levels, including equal participation in leadership and decision-making, regardless of gender.
- They must promote **coherence**, reducing fragmentation, competition and duplication; be aligned with existing international instruments such as the International Health Regulations (2005) and the Pandemic Influenza Preparedness Framework for the sharing of influenza viruses and access to vaccines and other benefits; ensure synergy between institutional capabilities for systems strengthening and financing; and promote the integration of HEPR capacities into national health and social systems based on universal health coverage and primary health care.

Figure 2. Reviews, reports and processes that have informed this white paper



GPMB: Global Preparedness Monitoring Board; Intergovernmental Negotiating Body to draft and negotiate a WHO convention, agreement or other international instrument on pandemic prevention, preparedness and response; IOAC: Independent Oversight and Advisory Committee for the WHO Health Emergencies Programme; WGPR: Member States Working Group on Strengthening WHO Preparedness and Response to Health Emergencies.

Health emergency preparedness, response and resilience is multi-sectoral by nature

Dealing effectively with the multiplying complex and multi-dimensional threats of the 21st century requires a strengthened and agile approach to the way we prepare for and respond to health emergencies. Where previously there has been chronic neglect and underinvestment in national capacities, we need to make smart, evidence-based investments that deliver the best possible return in terms of lives saved, sustainable development, global economic stability and long-term growth. That means recognizing that strengthening the global HEPR architecture must be part of the broader effort towards the 2030 Sustainable Development Goals.

Countries were already off track to meet their commitments under the health-related Sustainable Development Goals before COVID-19, and the pandemic has set back progress even further. Achieving the health-related Goals will therefore require a plan for recovery and renewal based on rapidly accelerating progress in three interdependent priority areas:

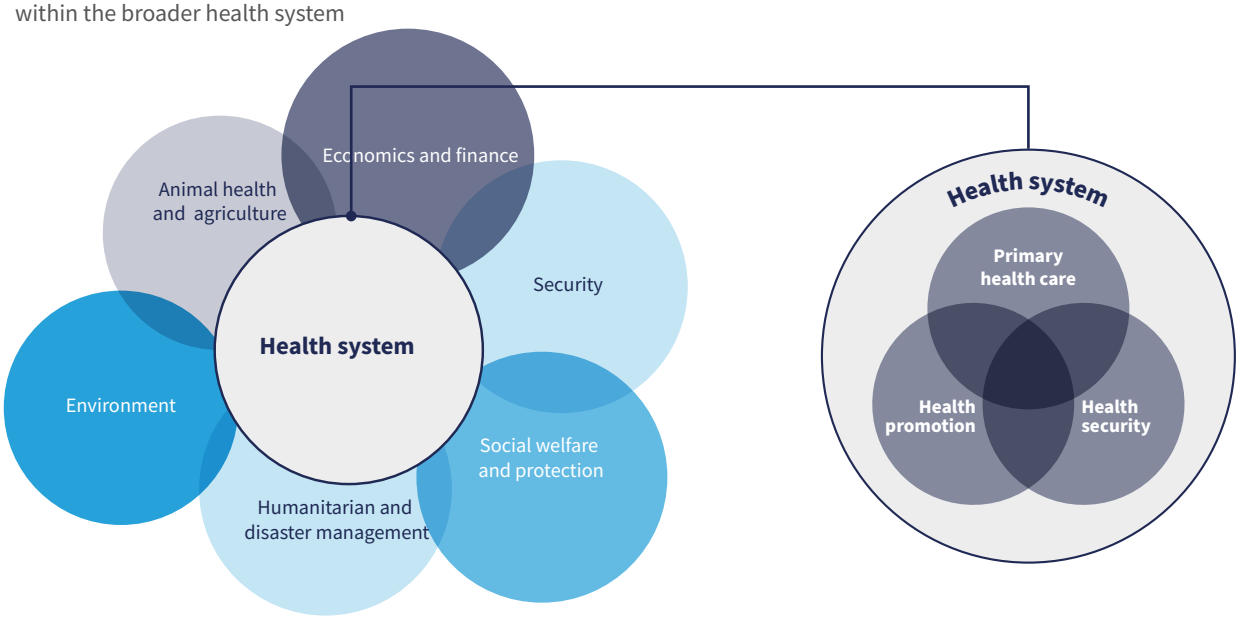
- Health promotion: preventing disease by addressing its root causes;
- Primary health care: supporting a radical reorientation of health systems towards primary health care, as the foundation of universal health coverage; and
- Health security: urgently strengthening the global architecture for HEPR at all levels.

These priorities stem from the simple principle that there is one health system, encompassing the common functions and structures that are crucial for health security, for primary health care, and for health promotion (Figure 3). Targeting these common capacities for investment will accelerate progress towards the health-related Sustainable Development Goals at the same time as boosting national and global health security. A renewed global architecture for HEPR must be built on a foundation of strong national health systems that are deeply connected with and accountable to the communities they serve, and which advance gender equity and human rights.

Many HEPR capacities straddle the boundary of the health system and other governmental and societal sectors and systems, such as education, finance, animal health and agriculture, and the environment. Investments are also needed to strengthen these links, and ensure greater coherence in multi-sectoral planning, readiness and response.

The need for greater coherence and coordination of effort and investment extends to the global level. The international community needs ways of working together that deliver collaboration and coordinated, collective action, and that address the fragmentation that impairs the current global architecture for HEPR. That means considering carefully the creation of new mechanisms, and the addition of new organizations or institutes to what is already a crowded landscape.

Figure 3. Investing in health security strengthens primary healthcare and health promotion, and vice versa, within the broader health system



Proposals for strengthening global health emergency preparedness, response and resilience

Within the broader context of recovery and renewal for achieving the health-related Sustainable Development Goals, and the need for greater coherence of the global HEPR architecture under the aegis of a new Pandemic Accord, 10 proposals for strengthening HEPR are outlined below (Figure 4).

Governance

Effective governance is essential to bring greater equity, inclusivity and coherence to the global architecture of HEPR, enabling Member States and partners to work collectively around a shared plan, galvanized by political will, and with the resources to sustain positive changes.

Proposal 1. Establish a Global Health Emergency Council and a Committee on Health Emergencies of the World Health Assembly

HEPR must be elevated to the level of heads of state and government to ensure sustained political commitment, and break the cycle of panic and neglect that has characterized the response to previous global health emergencies.

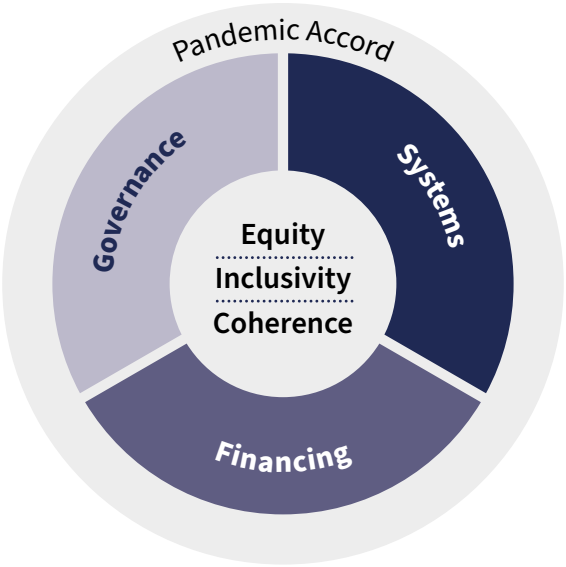
Several panels have proposed the establishment of a high-level body on global health emergencies, comprising heads of state and other international leaders. The Director-General supports this concept, and proposes the establishment of a Global Health Emergency Council, linked to and aligned with the constitution and governance of WHO, rather than creating a parallel structure, which could lead to further fragmentation of the global architecture of HEPR. Head of State participation, especially during health emergencies, would further strengthen WHO's primary constitutional function to act as the directing and coordinating authority on international health work (WHO Constitution, Article 2(a)).

The Council would address health emergencies as well as their broader context and social and economic impact. It would have three primary responsibilities:

- Address obstacles to equitable and effective HEPR, ensuring collective, whole-of-government and whole-of-society action, aligned with global health emergency goals, priorities and policies;
- Foster compliance with and adherence to global health agreements, norms and policies; and
- Identify needs and gaps, swiftly mobilize resources, and ensure effective deployment and stewardship of these resources for HEPR.

The Council would be composed of heads of state and government, attended by the United Nations Secretary General and WHO Director-General, with heads of relevant international organizations and other bodies as observers. The Council would meet annually to review progress in pandemic preparedness and response, and as required in the event of a public health emergency of international concern.

Figure 4. Summary of proposed solutions for the strengthening of the global architecture for health emergency preparedness, response and resilience



Governance

Leadership – Global Health Emergency Council, WHO Committee for Emergencies

Regulation – targeted amendments to the International Health Regulations (2005)

Accountability – universal health and preparedness review, independent monitoring mechanisms

Systems

Capacity – strengthened health emergency alert andresponse teams that are interoperable and rapidly deployable

Coordination: standardized approaches for coordinating strategy, financing, operations and monitoring of preparedness and response

Collaboration: expanded partnerships and strengthened networks for collaborative surveillance, community protection, clinical care and access to countermeasures

Financing

Predictable financing for preparedness – coordinating platform for financing with increased domestic investment and more effective/innovative international financing

Rapidly scalable financing for response – expanded contingency fund for emergencies

Catalytic, gap-filling funding – expanded financing through a new financial intermediary fund

The work of the Council would complement and be linked with the work of a Standing Committee on Health Emergencies, which the Executive Board established at its 151st session in May 2022.

To strengthen integrated governance, the Health Assembly could also establish a new main committee on emergencies, a Committee E. Such a new main committee could be linked with both the Council and the Standing Committee on Health Emergencies, and as an open-ended committee of all WHO Member States, Committee E would help to ensure global inclusivity. The Officers of Committee E and of the Standing Committee could be invited to attend meetings of the Council to further promote coordination among the three bodies.

Further, a Committee E could:

- Review the work of WHO in health emergency preparedness, response and resilience;
- Act as a conference of State Parties to the International Health Regulations (2005);
- Act as the peer review mechanism for the Universal Health and Preparedness Review; and
- Consider any recommendation by the Executive Board based on advice from the Standing Committee on Health Emergencies.

Such an interlinked arrangement could strengthen WHO's constitutional role as the directing and coordinating authority on international health work.

Proposal 2. Make targeted amendments to the International Health Regulations (2005)

The International Health Regulations (2005) (IHR) are the international legally binding framework that defines the rights and obligations of its 196 States Parties and of the WHO Secretariat for handling public health emergencies with potential to cross borders. The IHR remains an essential legal instrument for public health emergencies preparedness and response.

The COVID-19 pandemic has revealed some weaknesses in the interpretation of, application of and compliance with the IHR. The inherent tension between the aim to protect health and the need to protect economies by avoiding travel and trade restrictions has been noted by the IHR Review Committee on the Functioning of the International Health Regulations (2005) during the COVID-19 Response as the most important factor limiting compliance with the IHR.

In addition, too many countries still do not have sufficient public health capacities to protect their own populations, and to give timely warnings to WHO. The current reporting mechanism on the implementation of plans of action to ensure that the core capacities required by the IHR are present and functioning lacks incentives for compliance. The absence of a conference of the States Parties to the IHR is an overarching limitation in their effective application and compliance.

Further strengthening of IHR implementation compliance will require some targeted amendments. Areas of focus may include: improved accountability by establishing the national responsible authority for the overall implementation of the IHR, and a conference of State Parties (see proposal 1 above); more specificity in relation to notification, verification and information sharing; capacity-building and technical support for surveillance, laboratory capacity and public health rapid response; and streamlining the process to bring IHR amendments into force.

Ensuring that the IHR can be efficiently and effectively strengthened to accommodate evolving global health requirements is key to their continued relevance and effectiveness as a global health legal instrument.

Proposal 3. Scale up Universal Health and Preparedness Reviews and strengthen independent monitoring

In response to a proposal from several Member States, the introduction of the Universal Health and Preparedness Review (UHPR) was announced by the WHO Director-General in November 2020, with the goal of building solidarity, mutual trust and accountability for health, through an innovative intergovernmental review process. The UHPR is a Member State-led mechanism in which countries agree to a voluntary, regular and transparent peer review of their comprehensive national health emergency preparedness capacities, incorporating lessons learned from the COVID-19 pandemic on preparedness assessment. It aims to:

- Enhance transparency and understanding of a country's comprehensive preparedness capacities among relevant national stakeholders;
- Promote whole-of-government and whole-of-society dialogue on preparedness in countries, including close cooperation with governments, regional organizations and civil society;
- Encourage compliance with commitments made under the IHR and related Health Assembly resolutions in the field of emergency preparedness;
- Elevate considerations for preparedness beyond the health sector and ensure the comprehensive implementation of recommendations; and
- Promote national, regional and global solidarity, dialogue and cooperation.

A pilot phase of the UHPR mechanism was completed in 2021. Based on lessons learned from the pilot phase, the UHPR should now be scaled up to complement existing assessment tools and processes, and a peer review mechanism should be included as part of the UHPR process.

Self-assessment and peer review of national capacities, including through the UHPR, should be complemented by independent monitoring at the international level. The independent monitoring mechanism should be modelled on best practice in independent monitoring of international instruments, and should build on and strengthen existing monitoring mechanisms, such as the Global Preparedness Monitoring Board and the Independent Oversight and Advisory Committee for the WHO Health Emergencies Programme. The mechanism would be composed of an independent body of leaders and experts, supported by a transparent, evidence-based, expert-led data collection and review process, to ensure objectivity and credibility. It would have a broad scope, encompassing the global architecture of HEPR systems, financing and governance. It would report its findings and recommendations to the World Health Assembly, the Global Health Emergency Council, and the proposed coordination platform for financing.

Together, these accountability tools for governments, international organizations and other stakeholders across all sectors will: identify the risks and determinants of health emergencies; reveal gaps and weaknesses in the capacity and performance of health emergency systems and their financing and governance; develop and implement solutions to ensure equity, effectiveness and efficiency; and promote compliance with obligations under international law, including the IHR and the pandemic accord currently under negotiation.

Systems

The ability to prepare for, prevent, detect and respond effectively to health emergencies at national, regional and global levels depends on the operational readiness and capacities in five core subsystems (Figure 5; expanded on in Annex 1).

- Collaborative surveillance and public health intelligence through strengthened multisectoral disease, threat and vulnerability surveillance; increased laboratory capacity for pathogen and genomic surveillance; and collaborative approaches for risk assessment, event detection and response monitoring.
- Community protection through two-way information sharing to inform, educate and build trust; community engagement to create public health and social measures based on local contexts and customs; a multisectoral approach to social welfare and livelihood protection to support communities during health emergencies, and mechanisms to ensure the protection of individuals from sexual exploitation, abuse and harassment.
- Clinical care that is safe and scalable, with effective infection prevention and control that protects, patients, health workers and communities; and resilient health systems that can maintain essential health services during emergencies.
- Access to countermeasures through fast-track research and development, with pre-negotiated benefit sharing agreements and appropriate financing instruments; a seamless link between research and development and scalable manufacturing platforms and agreements for technology transfer; coordinated procurement and emergency supply chains; and strengthened population-based services for immunization and other public health measures.
- Emergency coordination with a trained health emergency workforce that is interoperable, scalable and ready to rapidly deploy; coherent national action plans for health security to drive preparedness and prevention; operational readiness through risk assessment and reduction and prioritization of critical functions; and rapid detection of and scalable response to threats through the application of a standardized emergency response framework.

Figure 5. Interconnected core subsystems for health emergency preparedness, response and resilience

Collaborative surveillance

Strengthened national integrated disease, threat and vulnerability **surveillance**

Increased **laboratory** capacity for pathogen and genomic surveillance

Collaborative approaches for risk assessment, event detection and response monitoring

Access to countermeasures

Fast track **R&D** with pre-negotiated benefit sharing agreements

Scalable **manufacturing platforms** and agreements for technology transfer

Coordinated procurement and **emergency supply chains** to ensure equitable access

Community protection

Proactive **risk communication and infodemic management** to inform communities and build trust

Community engagement to co-create mass **population and environmental interventions** based on local contexts and customs

Multi-sectoral action to address community concerns such as social welfare and livelihood protection

Clinical care

Safe and scalable **emergency care**

Protecting health workers and patients

Health systems that can **maintain essential health services** during emergencies

Emergency coordination

Strengthened **health emergency alert and response teams** that are interoperable and rapidly deployable

Coherent **national action plans** for preparedness, prevention, risk reduction and operational readiness

Scalable health **emergency response coordination** through standardized and commonly applied Emergency Response Framework

These capacities must be embedded in strengthened national health systems, and will require investment in essential public health functions, primary health care and health promotion. Strengthening integrated surveillance, community engagement, health promotion, routine immunization and other essential health services will reduce the risk of health emergencies, and enable communities to be ready for and more resilient to emergencies. Strong primary health and public health systems enable communities to better assess context-specific threats and vulnerabilities to reduce risk through prevention and readiness. The link between communities and national health emergency systems is critical to rapidly communicate risk and scale up support once an event has been detected.

Given these interdependencies and the breadth of actors involved, it is critical that the five core subsystems are well integrated within countries, and have strong links to structures for support, coordination and collaboration at regional and global levels across all phases of the health emergency cycle of prepare, prevent, detect, respond and recover (Figure 6).

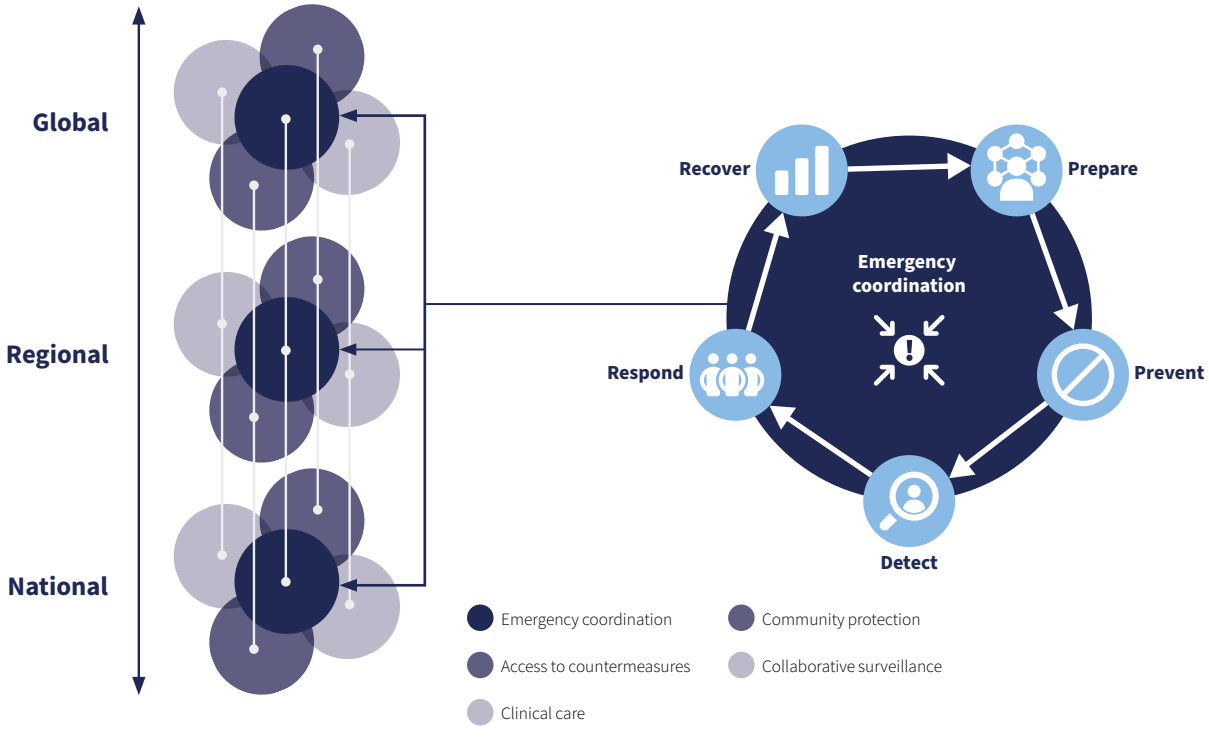
Proposals for strengthening both the subsystems and the linkages between them are outlined below.

Proposal 4. Strengthen global health emergency alert and response teams that are trained to common standards, interoperable, rapidly deployable, scalable and equipped

The COVID-19 pandemic continues to expose national-level deficits in the core capacities required for effective HEPR. National capacities are the fundamental building blocks of global health security; therefore, these deficits confer profound systemic risks.

Mitigating these risks will require substantial investments in many countries to build and strengthen professionalized multidisciplinary health emergency teams, fully integrated into national resilient health systems and other relevant sectors under the One Health approach. The scale and nature of workforce needs depend on national context, but the most substantial and widespread gaps highlighted by COVID-19 are in the areas of epidemiology and surveillance, including laboratories; the health system workforce required to rapidly scale up safe emergency clinical care and maintain essential services during an emergency; the non-clinical aspects of protection, such as working conditions and fair remuneration; and the community engagement and infodemic management resources needed to strengthen trust in health authorities and build community resilience to health emergencies.

Figure 6. Interlinkages between five core subsystems for health emergency preparedness, response and resilience across the emergency cycle



Smart investments in strengthening national capacities will enable the development of globally deployable health emergency alert and response teams to strengthen regional and global preparedness, detection and response. Combined with mechanisms for emergency coordination (see Proposal 5) to support training, accreditation and deployment, strengthened national alert and response teams can give rise to a country-owned yet internationally deployable global health emergency workforce.

Proposal 5. Strengthen health emergency coordination through standardized approaches to strategic planning, financing, operations and monitoring of health emergency preparedness and response

Health emergency subsystems are dependent on each other for operational effectiveness. At national level, COVID-19 demonstrated that overall health emergency preparedness and response management systems were often fragmented. At regional and global levels, the pandemic highlighted a lack of consistency in national approaches, a lack of effective mechanisms to coordinate and communicate action between countries, and challenges in efficiently channelling international support to where it was most needed.

Remedying this fragmentation will require further investment in ensuring greater consistency and standardization in emergency coordination at national level, including through a commonly applied emergency response framework. Application of this framework must be enabled by strengthened infrastructure, workforce and leadership that is resourced and empowered to: strengthen operational readiness through assessment of risks and vulnerabilities, and prioritization of critical functions across all core subsystems; develop context-specific strategies and plans for preparedness, prevention, readiness and response; mobilize the necessary resources; and monitor and evaluate actions. Health emergency management should be embedded in broader whole-of-government national disaster management systems.

A strengthened and redesigned network of public health emergency operations centres can connect international and regional technical, financial and operational support to national emergency management systems, and at the same time can improve coordination between countries and international partners across the health emergency cycle.

Box 1.

Detecting and preventing spillovers: a planetary perspective to health emergency preparedness, response and resilience

What do the past four public health emergencies of international concern (PHEIC) have in common? Ebola virus disease in Western Africa in 2014; the 2015–16 Zika virus epidemic; the 2018–20 Kivu Ebola epidemic; and the COVID-19 pandemic: all were the result of zoonotic "spillover" events, in which a pathogen jumps the species barrier from another animal into a human population. In each of the above cases, viral pathogens were able to spread in human populations before being detected.

Foreshortening the time between a spillover event and its initial detection is a major focus of the One Health movement, and a crucial component of strengthening the global HEPR architecture. The intrinsic links between health and disease in humans, domestic animals and wildlife means that an early warning system linked to surveillance and risk analysis at and beyond the three-way interface of humans, animals, and the environment is essential if we are to detect spillover events while containment is still a feasible option.

The rapid introduction of new technologies for surveillance, such as genomic sequencing, that has followed in the wake of COVID-19 in many countries has brought us an increment closer to realising the vision set out by the tripartite of WHO, FAO and OIE in their landmark 2004 report that relaunched the One Health concept. Fully implementing the tripartite's 2004 recommendations will be a key consideration as consultations on reforms to the governance, financing, and systems of global HEPR continue.

Ultimately, our collective approach to spillovers must move beyond detection to embrace prevention. Global deforestation, the trade in wildlife and wildlife products, and over-intensive animal rearing are not only disastrous for ecosystems and the global environment, they also drastically amplify the risk of spillover events. And as the rate of environmental degradation and ecosystem loss increases, so to does the risk of spillovers with epidemic and pandemic potential. Investments in HEPR only make sense in the context of a broader concerted and coordinated international effort to protect the health of the planet itself. Detecting and containing spillovers as close to when and where they first occur is the key to stopping outbreaks from becoming epidemics and pandemics, but addressing the root causes of spillovers is the key to preventing those outbreaks in the first place.

Proposal 6. Expand partnerships and strengthen networks for a whole-of-society approach to collaborative surveillance, community protection, clinical care, and access to countermeasures

COVID-19 has shown that resilience to health emergencies can be strengthened in key areas by broader and closer collaboration between organizations and institutions at national, regional and global levels before health emergencies hit. This will require the strengthening and, where required, the establishment of whole-of-society, interdisciplinary, multi-partner networks for collaborative surveillance, clinical care, community protection and access to countermeasures. This will enable the extensive ecosystem of HEPR partners at the global, regional and national levels to fully participate according to their strengths and capabilities to co-create innovative and timely solutions in an agile and collaborative way (see Figure 7 for a non-exhaustive illustration of the ecosystem of international partners for COVID-19).

Ad hoc and time-limited regional and global collaborations between national authorities, multilateral institutes and the private sector, such as the Access to COVID-19 Tools Accelerator (including COVAX) and the African Union Vaccine Acquisition Trust, played a crucial role in accelerating the development of COVID-19 medical countermeasures. Consolidating and building on these COVID-19 successes, while ensuring that collaborative arrangements are in place and build on existing networks between various global health agencies, industry and the scientific community to ensure fair access and scalable manufacturing, will help to protect the world from both known and theoretical pandemic threats.

At the same time, forecasting pandemic risks and detecting infectious threats can be transformed by closer interdisciplinary collaboration nationally, regionally and globally. The WHO Hub for Pandemic and Epidemic Intelligence is a new initiative that will play a leading role in strengthening collaborative surveillance. The WHO Hub will also drive further development of initiatives such as Epidemic Intelligence from Open Sources and the International Pathogen Surveillance Network. Established global surveillance systems for specific pathogens, such as the Global Influenza Surveillance and Response System, also provide a strong foundation upon which to build.

COVID-19 has also highlighted the role that collaborative efforts play in building the resilience of communities to health emergencies. The need to invest in collaborative arrangements that bring communities of practice and communities of circumstance together to design response and resilience measures has been highlighted after every major health emergency of the past two decades: COVID-19 makes these calls impossible to ignore.

The ecosystem of international partners for COVID-19 can be used as the basis for expanding the network of relevant partners, strengthening the links between them, and developing collaboration hubs for each of the five core subsystems to further strengthen the global architecture for HEPR.

Box 2.

Strengthening every link in the countermeasure chain

The unprecedented global effort to develop vaccines and diagnostics for COVID-19 is often portrayed as an overnight success. But, as with many such successes, it was built on many years of diligent work before the pandemic.

In 2016, in the wake of the world's deadliest recorded outbreak of Ebola virus disease, the WHO R&D Blueprint was launched to bring together a broad cast of researchers from academia and industry, regulators, governmental and non-governmental organizations, and multilateral institutes to prioritize action against a list of potential pandemic threats. Stemming from these efforts the Coalition for Emerging disease Preparedness Innovations, which was also launched in 2016, funded several of the ambitious vaccine-development programmes that ultimately yielded three of the vaccines that have received WHO Emergency Use Listing for use against COVID-19.

Getting these vaccines to where they are needed has proven more challenging. Despite the efforts and some notable successes of COVAX – the vaccines pillar of the Access to COVID-19 Tools Accelerator (ACT-A) – vaccine access remains highly inequitable more than two years into the pandemic. Many of the world's most vulnerable populations remain unprotected, which has prolonged the acute phase of the pandemic.

Learning the lessons of COVID-19 will mean building on the strengths and successes of the organizations and initiatives that existed before the pandemic, consolidating and institutionalizing what worked during time-limited collaborations such as ACT-A, and addressing the shortfalls that have resulted not only in inequitable access to countermeasures, but also in disparities in the speed, quantity and efficiency with which different categories of countermeasures – vaccine, therapeutics, and diagnostics – have been developed, tested, approved, and distributed to where they are needed most.

Much of this work will need to be done at the global and regional level to bring together partners from the length and breadth of the value chain through formal and informal mechanisms that span different pathogens and categories of countermeasures. These mechanisms, or mechanism, will need to provide the necessary incentives – with appropriate tolerances for risk – and benefit-sharing agreements to ensure that future countermeasures are delivered equitably, rapidly, and at scale.

Continued on next page …

Box 2. *(continued)*

The Pandemic Influenza Preparedness Framework, which celebrated its 10th anniversary last year, provides a case study in how to guarantee the access of developing countries to vaccines and other pandemic-related supplies. However, as COVID-19 has shown, the final step in the value chain can often be the most difficult step to take. The vaccine and immunization programmes of countries, along with the capacity of countries to rapidly adopt and adapt to new vaccines, diagnostics and therapeutics, have been implicated in every public health emergency of international concern to date. Building these capacities, which lie at the heart of resilient national health systems, will be crucial to prevent and respond to future epidemics and pandemics.

Key features of an agile, equitable, and risk-tolerant global system to ensure the development, manufacture, and distribution of medical countermeasures for pandemic threats

- End-to-end partnerships, built on the pre-existing trust that exists between core partners such as CEPI, Gavi, Global Fund, UNICEF and WHO, and which provides a forum for new stakeholders
- Inclusive governance, with a strong voice for low-income countries, lower middle-income countries, and civil society organizations
- Rapid decision making, based on the "no regrets" principle of emergency response
- Streamlined and coordinated regulatory processes across high-income, middle-income and low-income countries, balancing the need for speed and safety
- A multi-country platform for clinical trials to obtain statistically significant results more quickly from broad and representative populations
- Links to resilient emergency supply chains
- Pre-agreed, rapidly accessible funding for global procurement, and appropriate, risk-tolerant mechanisms to fund development and manufacturing
- Seamless linkage of the development process to distributed manufacturing capacity, with rapid transfer of knowhow from innovator companies
- Support to strengthen the science–policy interface and decision making in countries, and to strengthen the readiness of health systems to rapidly access and deploy countermeasures

Financing

Financing an effective health emergency preparedness and response architecture will require approximately an additional US$ 10 billion per year, according to WHO–World Bank analyses presented in 2022 to the G20. However, effective financing depends not only on more funds, but also on strengthened and innovative mechanisms to ensure that funds are accessed and delivered in ways that are agile and risk tolerant, to ensure the best possible return on investment and the most effective and timely allocation of resources to fill critical gaps.

Proposal 7. Establish a coordinating platform for financing to promote domestic investment and direct existing and gap-filling international financing to where it is needed most

Every country should step up domestic investments to prepare for health emergencies, but low-income countries and some lower middle-income countries need urgent international support to strengthen HEPR.

International financial support can come from many different actors, both public and private, with often overlapping and competing priorities. Greater coordination and simplification is needed across this funding landscape to ensure that existing funding flows are coordinated and targeted to the most critical gaps in the global HEPR architecture, such as national-level preparedness gaps, funding for regional and global institutions that support HEPR, investments in upstream and emergency research and development and downstream manufacturing and procurement, and rapidly accessible funding to initiate and scale emergency response operations. Where existing funding flows are insufficient to fill critical gaps in core national and global HEPR capacities, these flows should be augmented by additional catalytic and gap-filling funding through a financial intermediary fund (see below).

To bring coherence and efficiency across domestic and international investments, including additional investments through a proposed financial intermediary fund, a new coordination platform is required that unites the technical work of WHO and other HEPR partners as needed, with the financial investments of the World Bank and other international financial institutions. This coordinating platform for finance and health would monitor the performance of HEPR funding flows, improve effective allocation to critical priorities, and help to mobilize and direct catalytic and gap-filling financial support. This new mechanism should strive for worldwide representation, building on the work of the G20's Joint Finance and Health Task Force.

Figure 7. Illustrative ecosystem of international partners for COVID-19 (non-exhaustive)

Proposal 8. Establish a financial intermediary fund for pandemic preparedness and response to provide catalytic and gap-filling funding

Existing funding flows do not cover gaps in the HEPR architecture. A new pooled fund has been proposed by several reviews and organizations as a potential solution for international financing to better support national preparedness and response, and global public goods. Most recently, WHO and the World Bank recommended to the G20's Joint Finance and Health Task Force the establishment of a Financial Intermediary Fund (FIF), to be hosted by the World Bank.

The FIF should avoid duplication and ensure complementarity with existing HEPR financing efforts and institutions. Critical design elements for a FIF should include:

- A central role for WHO to enable direct linkage between national and global HEPR assessment and planning processes and the investments proposed by the FIF;
- Governance mechanisms that include a coalition of participating donors, and that are informed by objective assessments of HEPR needs and the perspectives of beneficiary country governments;
- Work with existing multilateral development banks and implementing partners, who should be eligible for financing; and
- Funding proposals would be based on national action plans for health security and related financing plans, filling gaps identified through the IHR monitoring framework and UHPR (see above).

Proposal 9. Expand the WHO contingency fund for emergencies to ensure rapidly scalable financing for response

At present, funding mechanisms for emergency response are fragmented and unpredictable. The WHO contingency fund for emergencies (CFE) is able to disburse relatively modest amounts rapidly for early response, but it is not designed to directly finance elements of national response, nor the efforts of key partners, often leading to operational gaps when implementing multi-disciplinary and multi-sectoral response plans. In addition, in the event that initial containment efforts fail, WHO's CFE is not designed to support the scale-up and adaptation of response, nor sustain a response over durations longer than the initial few months. In the absence of pre-negotiated draw-down mechanisms to enable access to larger tranches of flexible funding triggered by the escalation of health emergencies, critical windows for scale-up are often missed due to a reliance on unpredictable, often inflexible, and frequently insufficient funding from ad hoc appeals.

Addressing the problems above will require two innovations. First, the CFE should be expanded in size and scope to enable the direct financing of national and international partners in the first stages of the response, including deployments through the health emergency workforce and emergency supply chain. This will ensure that multisectoral health emergency response plans can be fully and rapidly implemented. Second, in the event that initial response efforts are unable to contain an infectious threat or sufficiently mitigate the effects of a non-infectious hazard, an additional substantial draw-down facility should be triggered to ensure that the multisectoral response can be scaled up to cover additional geographical areas and populations for an extended duration. The triggers for activation of this draw-down facility should be pre-negotiated, transparent and based on the "no regrets" precautionary principle.

An expanded CFE could satisfy both needs, with contingency funds accessed via two transparent mechanisms: a rapid response facility and a sustained scale-up facility, both of which would be linked to a standardized and commonly applied emergency response framework for alert, verification, risk assessment and jointly developed strategic plans and resource requirements for rapid and scalable response.

Equity, inclusivity and coherence

IEquity, inclusivity, and coherence are key principles reflected in the WHO Constitution, and central to the "happiness, harmonious relations and security of all people".

In all countries, the burden of risks of and vulnerabilities to health emergencies inevitably fall disproportionately on the most socially and economically disadvantaged and marginalized. As the ongoing experience of COVID-19 shows, the failure of the HEPR architecture to adequately address equity, particularly equitable access to medical countermeasures, has magnified and prolonged the acute phase of the pandemic. As Member States have emphasized, equity is not limited to access to medical countermeasures, but includes universal health coverage and national health systems strengthening.

An effective, equitable, inclusive, trusted and accountable HEPR architecture must meet the needs of all countries and communities, including the most marginalized and those in fragile, vulnerable and conflict-affected contexts. It is therefore essential that all countries be involved, and all communities be represented, in the translation of the proposals set out here into context-specific solutions, and in the allocation of investments for HEPR, with an equal role for low-income and middle-income countries in the leadership and accountability mechanisms of a new HEPR architecture.

Member States have also highlighted the importance of coherence, acknowledging 'the central role of WHO in the global health architecture, with its normative and standard-setting functions, and provision of technical assistance and support, as well as its convening power at the global, regional and national levels.' Broadening inclusion in global HEPR must go hand in hand with strengthening the links between current stakeholders to: empower coordination; reduce fragmentation, competition and duplication; and accelerate investment in HEPR within the broader context of the drive towards the Sustainable Development Goals.

Only in applying these principles of equity, inclusivity and coherence consistently and rigorously in the design and operations of the HEPR architecture at all levels, and monitoring their application, can we achieve the outcomes we seek. They apply across the three pillars of Governance, Systems and Financing, and are, in effect, a pillar in their own right, as they are at the heart of strengthening WHO in fulfilling its constitutional functions at the heart of the global architecture of HEPR.

This requires a shared understanding of how equity, inclusivity and coherence will be applied in practice, and how they will be monitored, based on measurable, objective metrics, to ensure action and accountability. Annex 2 provides details of how these principles will be applied and monitored in each of the 10 proposals.

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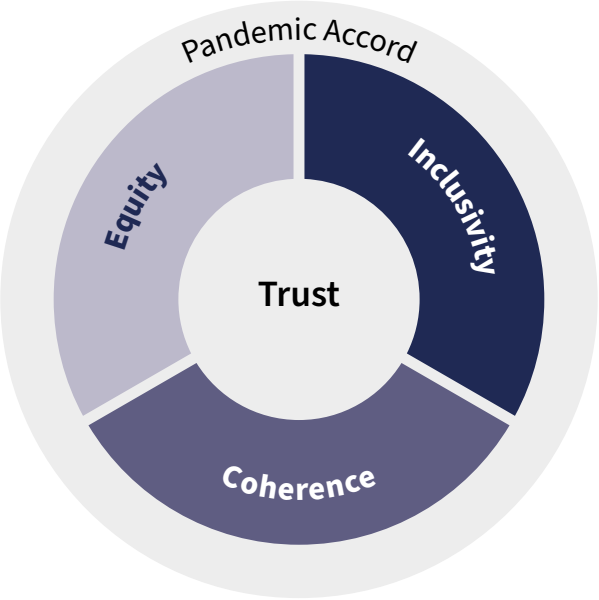
Figure 8. Equity, inclusivity and coherence at the heart of the global architecture for health emergency preparedness, response and resilience



Equity

- Highest level of health for all
- Equitable access to countermeasures and other essential resources
- First responder and last resort to protect the most vulnerable

Inclusivity

- All 194 Member States with an equal voice
- Whole of government & whole of society approach
- Collaborative networks of multi-sectoral & multi-disciplinary partners

Coherence

- Science, evidence and expertise to set the norms, standards and regulations
- Trusted, impartial and authoritative information to communicate risk
- Coordinated assessment, strategy, financing, operations & monitoring

Proposal 10. Strengthen WHO at the centre of the global HEPR architecture

Sustained commitment to equity, inclusivity and coherence (Annex 2) will be best served by the strengthening of and sustained investment in the only multilateral organization with a mandate that encompasses the systems, finance and governance of HEPR: WHO. To achieve this, the world needs a strengthened WHO, with the authority, financing and accountability to effectively fulfil its unique mandate as the directing and coordinating authority on international health work.

The Organization has essential responsibilities: for setting international norms and standards; for promoting and conducting research in the field of health; for providing data and information; for developing evidence-based policy and guidance; for investigating and responding to health emergencies as a first responder and as a provider of last resort, including in the most vulnerable and fragile contexts; and for maintaining strong relationships within the global health ecosystem. Discharging these responsibilities requires adequate and sustainable financing. A pandemic accord, adopted by WHO Member States, would reinforce the legitimacy and authority of WHO and complement steps that Member States are already taking to ensure sustainable financing of the Organization. The accord would also ensure that the technical expertise of WHO, its offices and its various scientific, normative, operational and monitoring bodies and networks, are utilized most effectively and efficiently within an equitable, inclusive and coherent architecture for health emergency preparedness and response.

Strengthening WHO at the core of the global HEPR architecture will continue to build and sustain trust in its mission, contributing to a safer world built on equity, inclusivity and coherence. A world with fewer health emergencies, with rapid detection and response when they do occur, with equitable access, with reduced health, social and economic impacts, and with rapid and equitable recovery (Figure 8).

Box 3.

Context is key to effective health emergency preparedness, response and resilience in fragile, conflict-affected and vulnerable settings

As COVID-19 has shown, health emergencies can have markedly different impacts even among countries and communities with seemingly similar capacities, risks, and vulnerabilities. One size of response does not fit all, and nowhere is this more true than in fragile, conflict-affected and vulnerable settings (FCVs). In these settings, the causes of and responses to health emergencies can interact with and often amplify pre-existing risks and vulnerabilities in unpredictable ways. In these contexts, operational readiness for preparedness and response must account for a number of key challenges, including:

- Shifts in resources required for critical measures for prevention, control and mitigation of infectious outbreaks may further compromise the already limited capacity to deliver essential health services
- Limitations on testing capacity may impact surveillance capabilities, requiring additional approaches to obtain a correct picture of the situation
- Capacity to scale up treatment and readiness to utilize new diagnostics, therapeutics and vaccines is often limited locally due to existing health systems challenges
- Social and public health measures, as applied in higher resource settings, may be harmful and threaten the livelihoods and social cohesion of communities in the absence of adequate measures to support communities
- In areas with armed conflict, violence and insecurity, preparedness, prevention and response measures must be carefully negotiated and designed with communities to avoid amplifying conflict and any existing mistrust in authorities
- Communities in fragile, conflict-affected and vulnerable settings may often be in geographically and socio-economically isolated areas, and pose unique logistical and security challenges

Strong community engagement is needed to build trust and protection, as well as ensure effective implementation of HEPR measures. Effective disease control in FCVs must be based on a pragmatic and contextualised adaptation of global guidance and goals that accounts for other public health threats and social economic realities. Done in this way, HEPR measures can reinforce the key role of health as a driver of peace and sustainable development.

Box 4.

Understanding the disproportionate effects of the COVID-19 response on women and children can strengthen health emergency preparedness, response and resilience in the future

The past two years have seen increasing evidence of the unique impact that COVID-19 and the public health and social measures of the response have had on women, children, and men.

Although men generally have higher mortality rates from COVID-19 than women, women and girls are disproportionately affected by the social and economic consequences of the pandemic. For example, women comprise around 70% of health and social care workers globally and 90% of the nursing and midwifery workforce and yet they hold only 25% of leadership roles in health. Women are typically clustered into lower-status, lower paid jobs in health and social care. Investing in equal pay – which includes recognizing unpaid health care work – is fair and urgent.

As in other health emergencies, the COVID-19 pandemic has intensified pre-existing gender inequalities, as reflected by:

- Increased burden of unpaid care work, which falls mainly on women and girls, due to the impacts of COVID-19 on the caregiving infrastructure
- Increased burden of paid health and social work during the pandemic falls disproportionately on women, who represent the largest share of health and social care workers globally
- Increased risk of domestic and gender-based violence due to the combined effect of enforced home-based confinement, restrictions on movement, and disruptions to health and social services
- Increased risk of unintended pregnancies and maternal deaths from disruptions to sexual and reproductive health services
- Higher probability of loss of job and/or income for women
- Exacerbation of existing barriers to services, driving inequitable coverage, such as inability to leave children unattended

Children of all ages and in all countries have been affected various ways by the socio-economic impacts of the COVID-19 pandemic and response measures, including through:

- Disruptions in essential nutrition and health services and increased food insecurity, mainly due to decreased purchasing power of families
- Disruptions in education and learning caused by school closures, which has also affected access to school meals and significantly increased rates of stress, anxiety and other mental health issues. It is estimated that 24 million children may never return to school, due to the economic impact of the pandemic
- An increased likelihood that children experience and observe physical, psychological and sexual abuse at home
- Increased threat of child labour, child marriage and child trafficking as a result of increased economic vulnerability

As with other health emergencies, COVID-19 has hit the most vulnerable hardest at the same time as increasing the number of vulnerable people. It is crucial to learn from and recognize how and why COVID-19 has had a disproportionate impact on women and children, and ensure that our collective priorities for strengthening the health emergency preparedness, response and resilience architecture are anchored in the principles of equity, inclusivity and coherence.

Next Steps

The HEPR systems, finance and governance proposals described in this white paper represent a coherent approach to developing a fit-for-purpose HEPR architecture. Operationalizing that architecture will require an additional level of detail, followed by implementation by both WHO and our partners. Change will not be easy, but time is of the essence – health emergencies can strike at any time and the COVID-19 pandemic is not over. WHO stands ready to build from the work done during the pandemic to develop the new capabilities required of it and to engage closely in ongoing processes, including the development of a Pandemic Accord.

The Director-General's proposals are designed to support and contribute to decision-making in the various fora within and beyond WHO that will determine the future global architecture of HEPR. History tells us that the world has a small window of opportunity to endorse and implement the proposals in this white paper before global attention shifts and we begin another cycle of panic and neglect.

The Secretariat welcomes comments and feedback on the proposals contained in the white paper. Consultations will continue to take place over the coming months with Member States, UN partners, other international and regional organizations, civil society, and other major stakeholders to discuss and further develop these proposals to build a safer world together.

Annex 1: Strengthening HEPR systems capacities

This Annex complements the White Paper by providing a first draft of additional details about HEPR systems key capacities (Figure 1). Each section describes a system, followed by subsystem key capacities and/or relevant considerations. This work is ongoing and will continue to be refined through consultations and expert technical input.

Figure 1: Interconnected core capacities and solutions for HEPR systems

Collaborative surveillance

Strengthened national integrated disease, threat and vulnerability **surveillance**

Increased **laboratory** capacity for pathogen and genomic surveillance

Collaborative approaches for risk assessment, event detection and response monitoring

Access to countermeasures

Fast track **R&D** with pre-negotiated benefit sharing agreements

Scalable **manufacturing platforms** and agreements for technology transfer

Coordinated procurement and **emergency supply chains** to ensure equitable access

Community protection

Proactive **risk communication and infodemic management** to inform communities and build trust

Community engagement to co-create mass **population and environmental interventions** based on local contexts and customs

Multi-sectoral action to address community concerns such as social welfare and livelihood protection

Clinical care

Safe and scalable **emergency care**

Protecting health workers and patients

Health systems that can **maintain essential health services** during emergencies

Emergency coordination

Strengthened **health emergency alert and response teams** that are interoperable and rapidly deployable

Coherent **national action plans** for preparedness, prevention, risk reduction and operational readiness

Scalable health **emergency response coordination** through standardized and commonly applied Emergency Response Framework

Collaborative surveillance

A truly interconnected global system for public health intelligence can revolutionise our ability to detect an emerging outbreak, communicate information fast, and rapidly initiate an appropriate response. Accurate, timely information about emergence, transmission, susceptibility, morbidity, and mortality, along with in-depth contextual insights on risk and vulnerability, are crucial for initiating and adjusting appropriate response measures, including targeting countermeasures towards the most vulnerable populations. Enhancing and expanding lab capacity, networks, mechanisms and incentives for sharing pathogens, biological samples and genomic data are vital to global pandemic preparedness.

Collaborative surveillance includes strengthened national integrated disease, threat and vulnerability surveillance, increased laboratory capacity for pathogen and genomic surveillance and collaborative approaches for risk assessment, event detection and response monitoring.

1.1 Strengthened national integrated disease, threat and vulnerability surveillance

National disease surveillance, starting at the lowest administrative level in a health system, is the foundation upon which a global HEPR must be built. There is therefore a pressing need to strengthen, expand, consolidate, modernise, automate and improve the coordination, sustainability, resilience and scalability of surveillance systems.

It is also crucial that links between national, regional and global surveillance systems are strengthened. Established global surveillance systems for specific pathogens or domains of surveillance, such as the Global Influenza Surveillance and Response System Plus (GISRS+) and the Global Early Warning System Plus (GLEWS+), represent a strong foundation upon which to build. GISRS+ and its sentinel systems have integrated SARS-CoV-2 since March 2020 and respiratory syncytial virus since 2015. The development of GISRS for influenza, SARS-CoV-2 and other novel respiratory viruses of pandemic potential should be an essential component of surveillance capacity building, and was supported by Member States at the 150th meeting of the Executive Board in January 2022, and recommended by the IHR Emergency Committee for COVID-19 in its 11th statement of April 2022.

The integration of polio and other vertical surveillance programs into national capacities could provide a key route to accelerate the strengthening of national integrated disease surveillance. Completing the transition of vertical pogram assets into broader national health systems can ensure that their unique strengths, including community based surveillance, translate into improved national capabilities.

To be effective, all the surveillance capabilities have to feed into a defined body in every government for synthesis and decision-making. These bodies could be ministries of health or national public health institutions.

Key capacities include:

- **Integrated surveillance, including indicator-based and syndromic surveillance, grounded in effective healthcare delivery services**

  Integrated surveillance, including traditional indicator-based and syndromic surveillance, is anchored in health systems with a national disease surveillance strategy based on IHR core capacities, focused on a list of priority and epidemic-prone diseases and syndromes informed by local risks. It also includes non-traditional approaches such as community-based, participatory, and event-based surveillance (including rumour surveillance, public information monitoring and social media listening).

- **Expanded One Health surveillance**

  One Health surveillance is the systematic collection, validation, analysis, interpretation of data and dissemination of information collected on humans, animals and the environment. It expands surveillance to encompass the broader ecosystem and associated risks, such as zoonoses, and food borne illnesses.

- **Strengthened active surveillance and event monitoring**

  Rapid verification, risk assessment and effective response to new public health events depends on strong field epidemiology, including: timely case investigation; contact tracing; and monitoring of key operational performance indicators such as vaccination coverage and health service delivery. Field epidemiology and information management training programs and agile field data collection systems are core to this capability.

- **Interconnected multisectoral threat and vulnerability surveillance**

  Multisectoral surveillance provides a contextualized view of threats and vulnerabilities to understand and manage the drivers of health risk as they emerge and evolve. It integrates demographic, social and economic drivers of health risk, based on local contexts.

1.2 Increased laboratory capacity for pathogen and genomic surveillance

Increased laboratory capacity benefits both public health surveillance systems and health care delivery. A comprehensive laboratory network incorporating clinical, sentinel, and reference laboratories performing appropriate public health functions will serve both, ongoing disease programs and emerging infectious disease detection. Access to surge capacity during emergencies, including through agreements to access regional and/or global auxiliary capacity, should be established, maintained, and regularly tested to ensure system readiness.

The Director-General launched the pilot testing phase of the WHO BioHub System in 2021. Its goal is to offer a reliable, safe and transparent mechanism for Member States to voluntarily share novel biological materials, without replacing or competing with existing systems, and contribute to the acceleration of research and innovation before and during epidemics and potential pandemics.

Key capacities include:

- **Expanded laboratory and testing capacity**
  National laboratory and testing capabilities, compliant with internationally and nationally recognized quality standards, should be closely linked to national public health systems. Strategies to ensure accurate and timely pathogen detection should be adapted to the local context and incorporate tools such as multiplex platforms, point-of-care diagnostics, and mobile laboratory infrastructure as appropriate. This should be with appropriate mechanisms to ensure functional and integrated specimen collection, transport, and result reporting.
- **Established and scaled genomic surveillance capabilities**
  Advanced capabilities, such as genomic sequencing capacity, must be established, scaled, and linked to regional and global initiatives to guide the public health response. Such capacities should cover emerging pathogen and outbreak detection, epidemiological investigation, monitoring, and research and development of countermeasures during outbreaks.
- **Laboratory data systems integrated into broader health and surveillance systems**
  Laboratory data for pathogen diagnostics should be shared in a timely manner for public health action, and data systems should be integrated into the broader health system. Data systems should be based on interoperable laboratory management information systems and networks, according to agreed standards and principles, and ensuring data security and patient anonymity where necessary.
- **Strengthened international platforms to enable sharing of biological samples and genetic data**
  Rapid sharing of biological and genetic data is critical for effective pandemic and epidemic intelligence globally. Effective sharing is essential not only for outbreak identification and control efforts, but also for expediting research and development process for medical countermeasures.
- **Enhanced biosafety and biosecurity to limit biorisk**
  Strengthening laboratory and diagnostic capacity should include enhanced capacities to carry out risk assessment, informing biosafety and biosecurity policies and practice. This can only be achieved if relevant standards are routinely maintained in laboratories at all times.

1.3 Collaborative approaches for risk assessment, event detection and response monitoring

The collaboration between various surveillance actors at the local, national, regional and global level, as well as between diverse sectors, is essential for a full understanding of risks, vulnerabilities, event detection and response monitoring. Mechanisms that integrate and harness information from divergent sources combined with advanced data and analytical tools that can provide valuable insights for effective detection and response.

At the global level, the WHO Hub for Pandemic and Epidemic Intelligence fosters such a collaborative approach to surveillance by connecting data, solutions, and communities of practice globally; by innovating solutions and processes; and strengthening capabilities for forecasting, detection and assessment of risks to provide of actionable intelligence for prevention, preparedness, response and recovery from health threats and emergencies. The WHO Hub for Panemic and Epidemic Intelligence aims to build a collaborative, trust-based community involving a diverse set of multi-disciplinary entities, including National Public Health Institutes (NPHIs). For example, the initiative Epidemic Intelligence from Open Sources (EIOS) brings together initiatives, networks and systems to create a unified all-hazards, One Health approach to early detection, verification, assessment and communication of public health threats using publicly available information.

Key capacities include:

- **Expanded networks for collaborative intelligence and decision making**

  Data and information sharing among local and national health authorities (such as National Public Health Institutes), regional bodies and WHO can guide responses to emerging and established threats, and improve decision making. Collaborative networks should convene a broad range of expertise at local, national, regional, and global levels.

- **Strengthened data-sharing platforms to connect and integrate multi-sectoral sources of information**

  Innovative data-sharing platforms are required to connect, integrate and harness information from diverse sources, and can be strengthened through the promotion of best practices in data governance and management.

- **Interconnected multidisciplinary communities to co-create advanced analytical and modelling tools**

  Easily accessible and adaptable advanced analytical and modelling tools can enhance advanced cross-sectoral surveillance, improve outbreak detection, and guide response decision making. A multidisciplinary community is best placed to co-create models based on relevant health emergency use cases, and should be fostered and enabled.

- **Open access to tools and analysis to inform tactical and strategic operations and decision-making**

  Integrated data, tools, and apps to improve data-driven decision making should be made available and openly accessible through a community-owned virtual marketplace to promote innovation and co-creation of open source solutions. Tools should enable risk and vulnerability characterisation, and impact monitoring and assessment. An effective marketplace would require modern data systems and infrastructure, and agreed standards for data quality, privacy and security. Such a marketplace would give decision makers access to analytical insights and tools for data visualisation (including dashboards) to inform and enable rapid, evidence-based decision making.

Community protection

Building trust with communities fosters engagement and enables the adaptation of public health and social measures. Trust can also be strengthened, and the effectiveness of public health and social measures improved, through multisectoral collaboration to protect social welfare and livelihoods during health emergency response. Reinforcing ties between local networks and communities of practice at a global scale can enhance protection of the most vulnerable and marginalised populations.

Two-way communication can build trust and inform the co-creation and co-ownership of preparedness and response measures. WHO's EPI-WIN initiative enables work with international and local partners to establish priority actions with faith and religious leaders, youth networks, the labour force, fact-checking organizations and infodemic managers to foster trust and understanding about how health emergencies are affecting lives, and what can be done to support each community in their own unique contexts to respond effectively.

The RCCE Collective Service is intended to develop and sustain structures and mechanisms that promote coordinated community-centred, evidence-based and participatory approaches to risk communication and community engagement. It aims to embed risk communication and community engagement across public health, humanitarian and development response efforts. The Service brings together key assets of partnering organizations into a holistic and consistent approach.

Community protection includes risk communication and infodemic management, community engagement to help design and implement public health and social measures, and multisectoral action to address community concerns.

2.1 Proactive risk communication and infodemic management to inform communities and build trust

Enduring trust and resilience can only be built through consistent and effective engagement with, participation and ownership of communities before, during and after health emergencies. Infodemic management, combined with adequate risk communication and consistent community engagement can improve uptake of and participation in public health and social measures (PHSM), and increase trust in and demand for countermeasures such as vaccines.

Key capacities include:

- **Social listening and sentiment analysis**
  Understanding individual and community behaviours enables the detection of information deficits. Platforms to monitor dynamic changes in perceptions and attitudes should be used routinely and leveraged during health emergencies to adapt risk messaging. Fostering a dynamic understanding of public attitudes and perceptions, concerns and feedback, as well as conversations about infectious pathogens and public health and response measures is essential to inform the design and implementation of plans for risk communication and community engagement. Novel approaches, such as social listening and sentiment analysis, offer new ways to understand community perceptions and concerns.
- **Health messages adapted to community context**
  Risk communications can be co-created and tailored to local contexts on the basis of social and behavioural data and community feedback. Testing risk communications through participatory processes enables communications to be tailored to target sub-populations. Monitoring of the effectiveness of communications can enable messages to be adapted in step with evolving contexts and community concerns.
- **Empowering communities to strengthen resilience against mis/disinformation**
  Communities should be empowered to co-create interventions to mitigate potential impacts of PHSM and build resilience against mis/disinformation. Understanding community concerns and characteristics of target populations can inform the design of interventions. It should be done in partnerships with a range of stakeholders. Design and implementation of interventions should be tied with effectiveness tracking.

2.2 Community engagement to co-create population and environmental interventions based on local contexts and customs

Dynamic adaptation and co-creation of PHSM with communities means that those measures are more likely to be inclusive, equitable, and adapted to local context, practices, risks and threats. Co-creation requires thoughtful community engagement, through established consultation processes, engagement and feedback mechanisms and platforms to capture community views, needs and experiences, including those of the most vulnerable. PHSM should be adjusted to local contexts based on social and behavioural data and community feedback.

PHSM, dynamically co-created with communities, should be systematically integrated in national, subnational and community health preparedness and response plans, financing and monitoring and evaluation frameworks, agreed on at the highest level of government and supported by legislation. PHSM should be implemented and adjusted based on continuous analysis of epidemiological data, health system capacity and contextual factors that influence the effectiveness and burden of interventions, so that benefits are maximized while the health, social and economic burden is kept to a justifiable minimum.

Global collaborations are needed to build evidence and further understanding of how PSHM work in different contexts, combinations and durations, to balance risks and benefits. Ethical considerations for the implemention of interventions should be carefully considered. Monitoring of the operational performance of PSHM and community attitudes and perceptions can inform further adaptation.

Specific strategies can include:

- **Building community resilience**
  Communities need to be ready for and resilient to health emergencies and shocks, such as climate-related hazards, natural disasters, conflicts, and pandemics. Readiness and resilience measures should be adapted to local contexts, taking into consideration specific risks and threats. Adaptations should factor in the specific requirements of at-risk groups.
- **Emergency vaccination**
  Community-centred development of emergency vaccination plans, based on evidence and consultations, can increase confidence, trust and demand for vaccines. Community-centred approaches can foster a better understanding of at-risk groups, inform adaptations to service delivery (including mobile vaccination sites) to better reach specific sub-populations, and understanding and addressing perceptions of vaccine safety and benefits.
- **Vector control and other environmental measures to contain spillover**
  To mitigate risks at the animal–human interface, specific, localized risk-reducing interventions and direct vector-control interventions may be needed. Interventions should target drivers of emergence and spillover, and be adapted to local contexts. Where measures impinge on livelihoods due to their impact on agriculture and/or livestock, appropriate incentives and compensatory mechanisms may be required to offset lost earnings and maximise community consent and participation.
- **Travel and trade measures**
  Travel-related measures, including those mplemented at points of entry should be risk-based, evidence-based, context-specific. They should be discussed and appropriately communicated with all key stakeholders involved, including local communities and cross-border authorities. Essential travel and transport operations should be prioritized for emergency and humanitarian actions, with priority given to essential personnel, repatriations and cargo transport of essential supplies such as food, medicines, vaccines and fuel, with the aim of ensuring supply chain continuity.
- **Other public health and social measures to interrupt human-to-human chains of transmission**
  Measures to interrupt chains of transmission include locally tailored isolation and quarantine, improved sanitation and hygiene, safe and dignified funerary rites, and a risk-based approach to mass gatherings and population movements. Careful assessment of the impact of any restrictions on movement is required to minimize exacerbation of existing inequities.

2.3 Multisectoral action, including social welfare and livelihood protection, to address community concerns

Communities should be early partners across all stages of health emergency preparedness, response and recovery, and should be closely consulted on the design of all PHSM that have a direct impact on the lives and livelihoods of local communities. Community support for PHSM relies on fostering a clear understanding of the public health rationale underpinning those PHSM. This understanding should be based on confidence that interventions will come at the lowest possible cost to livelihoods, education, and social and mental wellbeing. Whole-of-society and whole-of-government approaches require multisectoral engagement and feedback mechanisms to address community needs through contextual adaptation, community participation and ownership. Adaptation based on close consultation is particularly important to drive participation and minimize harm to vulnerable groups, including women and children.

Key considerations include:

- **Social welfare and protection**
  The health, social and economic burdens experienced by individuals and societies should be carefully measured, considered in decision-making and implementation, and minimized. This should include strengthening protection of vulnerable groups, such as women and children. Decision makers should pay careful attention to addressing risks of physical, psychological and sexual abuse.
- **Livelihood and economic safety nets**
  Understanding of the impact of measures may further guide the design and implementation of socio-economic support systems and safety nets to alleviate unintended harms. Additionally, the design and calibration of population and environmental measures should be influenced by socioeconomic considerations, including impact on businesses and the broader economy.
- **Continuity of education and learning**
  Learning and continuation of education is an essential right to children worldwide. In addition, schools can provide protection, but also school-meals and social support. Careful consideration to ensure access isneeded, especially among vulnerable groups. Enabling platforms need to be adapted to local contexts and resources.
- **Food security**
  Food supply chains should be maintained, limiting impacts on food supply and demand. International and border measures should be assessed for potential disruptions, with mitigation measures co-created with the most affected communities, such as food delivery or equitable economic allocations.

Clinical care

A strong HEPR architecture is anchored in strong national health systems and primary health care. High-quality health services and capacity are necessary to detect, prevent and respond to health emergencies. Existing gaps in health systems were generally understood before COVID-19, and are already targeted for strengthening through the Universal Healthcare Agenda. However, a resilient health system goes beyond the availability of resources, and ultimately depends on its capacity to re-organize and re-deploy existing resources in response to shocks such as health emergencies. The most safe and resilient health systems have the agility and flexibility to surge to meet increased demands imposed by health emergencies whilst maintaining essential services, and protecting and supporting health workers and patients. Resilient health systems ensure equitable access to care, mitigating financial, contextual, and cultural barriers.

Clinical care includes lifesaving and scalable clinical care, protection of healthcare workers and patients, and health systems that can maintained essential health services.

3.1 Safe and scalable emergency care

All countries should invest in capacities to ensure that adequately trained staff, resources and infrastructure are available for the management, referral and transportation of all patients affected by health emergencies, based on risk and vulnerability assessments. The ability to provide safe and scalable emergency care in health emergencies can be reinforced by strengthening essential capacities in strong, resilient health systems. Capacities should be anchored within rapidly deployable clinical care protocols at facility level to prioritize patient flows during a health emergency, including through patient screening, isolation, acuity-based triage and targeted referral pathways. Ensuring access and adapting services for at-risk populations should be a priority. Non-essential services should be reintroduced as the emergency abates. Global collaboration should reinforce capacities through the establishment of a global network of experts than can rapidly inform and disseminate novel clinical care information, guiding the development of best practices.

Key capacities include:

- **Resilient infrastructure and safe health facilities**
  Health infrastructure should be resilient to disruptions caused by health emergencies. Safe health facilities should remain accessible and fully functional following an emergency, ensuring continuous clinical care. Infrastructure considerations include the use of renewable energy sources to increase resilience and lessen environmental impact.
- **Emergency clinical care pathways**
  Emergency clinical care pathways should prioritize access to high quality care, especially among at-risk populations. Effective pathways require the establishment of mechanisms for pre-hospital and emergency patient flows, such as patient triage and isolation, and adapted referral pathways triggered by specific emergencies. Strategies should focus on promoting flexibility safety, and equitable access including through the use of modular infrastructure and alternative facilities. Evaluations of case management procedures and protocols should inform the design of care pathways.
- **Surge capacity for clinical care**
  Clinical capacity, including workforce, should be able to surge in anticipation of and in response to health emergencies. Training and long-term planning for health workforce development is a crucial aspect of preparation for scenarios in which health workers must be redeployed to meet a surge in demand. Phased reallocation of workforce from routine services towards emergency services should be determined by established triggers and thresholds. In situ capacity may be augmented by rapidly deployable national and international Emergency Medical Teams (EMTs) to support emergency clinical needs.
- **Stockpiles of emergency supplies and medicines**
  Supplies and equipment should be pre-defined based on priority listing, adapted to local contexts, risks, and vulnerability. Equitable access should be planned pre-emergency, using strategies such as stockpiles and pre-negotiated contracts, based on transparent allocation frameworks.

3.2 Protecting health workers and patients

Protecting health workers and patients is essential in health systems and communities before, during, and after health emergencies. Protection includes protecting health facilities and health workers from attacks. Investing in infection prevention and control (IPC) is one of the most cost-effective interventions available to reduce infection and anti-microbial resistance (AMR) in health care facilities. Immediate access to sufficient personal protective equipment (PPE) and rapid IPC training early in an emergency can reduce morbidity and mortality, while generating substantial net financial savings. IPC should be anchored in strong water, sanitation and hygiene (WASH) capacities.

IPC should be embedded and monitored within broader health systems, in synergy with other programmes such as those dedicated to AMR, quality of care, patient safety and occupational health. IPC strategy should address a range of threats, pathogens and emergency contexts.

Key capacities include:

- **Mechanisms to monitor and mitigate attacks on health**
  Attacks on health facilities and health workers deprive people of care and endanger health care providers. The nature of attacks vary across contexts, and can range from physical attacks with heavy weapons to threats and intimidation. The systematic collection of evidence of attacks, advocacy and political intervention to end such attacks, and the promotion of good practices for protecting health facilities and workers from attacks are necessary to save lives and maintain strong health systems.
- **Access to IPC materials and training**
  IPC should improve health worker and patient safety at the point of care, with optimal practices supported by IPC materials embedded within the patient pathway and clinical care. Materials and training are essential tools for the prevention and containment of outbreaks. Interventions to change practices and the continuous training, supportive supervision and mentorship of health workers and essential staff on IPC measures and the rational use of PPE are necessary to ensure that patients, health workers, caregivers and visitors are protected.
- **Adequate WASH services in health facilities**
  WASH infrastructure should be a permanent and accessible element throughout health facilities, extending beyond isolation wards to other wards. Access to WASH services should also be provided in public places and community spaces based on risk analyses, with special consideration given to sites used by vulnerable communities and community isolation centres.

3.3 Health systems that can maintain essential health services

Resilient health systems are core to achieving universal health access and the maintenance of essential services during emergencies. Solutions to strengthen resilient health systems must address foundational health system gaps and essential public health functions, which provide a cost-effective, holistic approach to strengthening public health capacities.

Maintaining access to essential health services hinges on a strong primary healthcare foundation that can be adapted in the context of an emergency, and should also seek to detect and address changes in patient behaviour, including fear of healthcare settings and its impact on care seeking.

Key capacities include:

- **Protection of essential health services**
  Essential services should be pre-defined and scaled on the basis of recommendations adapted to local contexts based on needs and threats, and should encompass a wide range of services along the life course, including maternal and child care, and routine immunizations. A primary healthcare approach can help to ensure the continuation of essential health services during health emergencies, because a primary health care system provides a flexible and adaptable care-deliver platform with strong links to local communities. Health emergencies should trigger dedicated protocols, including financial processes, for scaling and protecting essential services, with careful consideration given to user fees and co pays.
- **Monitoring disruptions to essential health services**
  Mechanisms to monitor the delivery of and access to essential services should be embedded in prioritization processes that incorporate specific thresholds to trigger support and ameliorative action. Monitoring should enable detection and characterisation of disruptions, and is crucial from the onset of emergencies and throughout an evolving response.
- **Resilient and adaptable health workforce**
  The deployment of the health care workforce across the health system should be managed during health emergencies based on pre-defined trigger thresholds adapted to a wide range of potential scenarios. Resilience of the health workforce includes non-clinical aspects of protection, such as working conditions, fair remuneration, the availability of hazard pay, professional education and development and mental health support. Gender dynamics should also be considered, given that women make up the majority of the health workforce in most countries.
- **Recovery of health systems after emergencies**
  Health systems should return to a pre-emergency operational posture based on defined thresholds as health emergencies subside. The post-emergency recovery phase should include mechanisms to capture lessons from after-action reviews and other review processes to further strengthen resilience through a process of continuous learning, adaptation and improvement.

Access to countermeasures

Seamless, concerted and coordinated efforts across every step of the countermeasures value chain is necessary to continue accelerating development and equitable deployment of countermeasures. This should be enabled by innovative financing mechanisms that are appropriately tolerant of the risk inherent in countermeasure research and development, in which most candidates will fail. Few countries will have the capacity to complete this end-to-end process within their own borders, therefore regional approaches should be considered as the most efficient way to ensure equitable global access to new countermeasures.

Several existing partnerships and legal agreements have increased access to countermeasures, primarily against specific pathogens such as influenza, smallpox, yellow fever, cholera, and meningitis. These have paved the way for stronger, global multisectoral collaboration. The International Coordinating Group (ICG) on Vaccine Provision provides a framework to manage and coordinate the provision of emergency vaccine supplies and antibiotics to countries during major outbreaks. The Pandemic Influenza Preparedness (PIP) Framework enables developing country access to vaccines and other pandemic-related supplies, acting as the only mechanism securing real time access. The R&D blueprint allows for rapid activation of R&D activities during epidemics, using R&D roadmaps and target product profiles for priority diseases. In response to COVID-19, the ACT-Accelerator was launched in 2020 to accelerate the development of COVID-19 tests, treatments and vaccines and to ensure their equitable distribution.

Equitable access to countermeasures should be based fast-tracked and prioritized R&D with pre-negotiated benefit-sharing agreements, scalable manufacturing platforms and agreements for technology transfer, and coordinated procurement and emergency supply chains.

4.1 Fast-tracked R&D with pre-negotiated benefit-sharing agreements

A well-resourced, globally shared R&D roadmap should build on the lessons and strengths of the WHO R&D Blueprint, COVID-19 Solidarity Trials, PIP Framework and other initiatives. Such a roadmap should encompass multiple priority pathogens and prioritize and incentivize the development, manufacturing and rapid deployment of countermeasures in response to both the emergence of known pathogens and a hypothetical 'disease X' scenario.

Key capacities include:

- **Shared global R&D agenda to strengthen coordination**
  A shared global R&D agenda would set clear priorities, establish roadmaps and ensure global coordination of R&D activities. It should include platforms for the coordination of research, with representation from all major stakeholder groups, including LICs and LMICs. Aligned and coordinated scale-up plans in case of the emergence of new pathogens are needed. Essential R&D activities should be well defined, to enable mitigation strategies to minimize disruptions in the context of emergencies. High-quality operational research should feed back into the shared global R&D agenda and continuously inform the prioritization of research activities.
- **Enabling environment for research and discovery**
  Pre-negotiated benefit-sharing agreements and frameworks for accelerated emergency research and development of countermeasures can ensure global coordination and collaboration and avoid duplication. Agile financing with adequate risk tolerance, such as forgivable loans, can align incentives between stakeholders. Frameworks to enhance collaboration should include means to facilitate information and sample sharing. Safety and ethics are central prerequisites for effective enabling environments.
- **Standardized platforms to scale clinical trials equitably**
  Global collaboration on clinical trials through standardized protocols, processes and programs enable rapid scaling and improve the diversity of trial participants. Pre-established protocols for participation in international clinical trials during emergencies should be created and/or adopted at the national level.
- **Adapted regulatory and legal frameworks to accelerate clinical trials**
  Agile yet thorough and comprehensive emergency use listing and pre-qualification processes are required for emergency situations to expedite clinical testing and approval of novel countermeasures at the same time as ensuring compliance with appropriate safety standards. National emergency regulatory approval procedures should be developed, and may be expedited by harmonization with global authorization processes.

4.2 Scalable manufacturing platforms and agreements for technology transfer

There is a clear need for additional global, geographically diversified manufacturing capacity that can be rapidly pivoted to emergency needs during crises. Globally distributed manufacturing capacity can ensure that more people will have early and equitable access to countermeasures in the future. Manufacturing platforms and agreements for technology transfer can enhance equity among countries.

Key capacities include:

- **Adapted manufacturing platforms that can scale rapidly**
  Manufacturing platforms should be built with the goal of scaling rapidly, leveraging multiproduct technology to be rapidly adaptable to new needs. These platforms should be aligned with prioritized needs and coordinated at a

national, regional, and global level as needed, based on local contexts and capabilities.

- **Distributed manufacturing capacity with pre-negotiated agreements to ensure equitable access**
  Pre-negotiated and equitable access to production capacity, markets, and appropriate risk-tolerant capital agreements should be established. Reaching collective agreements on equitable access to countermeasures requires among others the relevant clauses in manufacturing contracts and standardized and collaborative procurement processes.
  Equitable manufacturing capacity implies an even distribution across global regions to balance aggregation of demand with proximity to end users. Enabling access to technologies, including global technology transfer, licensing agreements and facilitated access to knowhow, equipment and raw materials is necessary to operate and appropriately scale-up manufacturing capacities.
- **Expanded ever-ready capability for rapid mobilization**
  Manufacturing for all major categories of emergency medical countermeasures (including vaccines, therapeutics and diagnostics) should be dual use wherever possible to maintain a constant state of readiness. Dual use in this context may mean the integration of emergency capacity into the manufacturing of non-emergency products, such as vaccines for routine immunization programmes. Installing and strengthening global coordination and access to manufacturing capacity (including equipment and raw materials) can ensure equitable access to meet the needs of LICs and LMICs.
- **Strengthened regulatory, legal, and enabling frameworks to scale manufacturing platforms**
  Capacity should be complemented by pre-defined mechanisms for licensing and intellectual property sharing. Strengthening national regulatory capacities is needed for effective and efficient oversight of the quality, safety and efficacy of medical products, and marketing authorization/registration of medical products. This should include the adoption and/or adaption of regulatory, quality assurance, indemnification / liability, and labelling standards. Regulatory flexibility enables rapid access to existing and novel products. Policy and regulatory hurdles that limit equitable access should be addressed.

4.3 Coordinated procurement and emergency supply chains to ensure equitable access

Supply scarcity in the context of an outbreak can paralyse response mechanisms and increase inequity. Emergency supply chains are needed to ensure that supplies are available when and where they are most needed, and that the logistics to access them are robust enough to hold up in times of crisis. Capacities established during COVID-19 can be further strengthened and sustained on the basis of lessons learned.

Key capacities include:

- **Pre-defined list of essential supplies and medicines**
  An essential supplies and medicines list should be developed based on national treatment guidelines and prioritized threats. Primary, secondary, and tertiary suppliers should be identified to ensure continuous access, even in the event of supply chain disruptions.
- **Pre-negotiated coordinated procurement to ensure access**
  Agile, transparent, pre-negotiated and coordinated procurement processes should be developed and include bridge and/or innovative financing, such as demand pooling mechanisms, advance purchase commitments and/or early use agreements. Processes should be agile and address any potential barrier to product delivery, such as payment delays. Global and/or regional procurement processes can facilitate large-scale procurement efforts.
- **Coordinated global demand aggregation to optimize risk sharing**
  National response authorities should coordinate demand aggregation, using consolidated approaches to demand forecasting and fit-for-purpose technology platforms. National-level partners should work closely with a network of global partners to coordinate global demand aggregation.
- **Ensured equitable and transparent access**
  Equitable and transparent allocation frameworks can ensure equitable national access to a necessary minimum quantity of supplies. Strengthening equitable and transparent allocation frameworks should include the establishment of coordinated governance mechanisms, collective agreements, and political commitment to ensure equitable access to goods, especially for supply-constrained countermeasures.
- **Strengthened global, regional and national logistics and distribution that rely on pre-negotiated and coordinated contracts**
  Strong, resilient, tested, diversified and coordinated national and local supply chains have clear plans for the delivery and implementation of countermeasures that are fit for purpose for inter-pandemic years as well as during emergencies. Comprehensive review of trade practices, frameworks and incentives, and existing agreements can identify potential hurdles and enable a free flow of raw materials and goods during emergencies to maximize the supply of products. National supply chains rely on pre-negotiated and coordinated distribution contracts, drawing on stockpiling and logistics hubs, with clear protocols for allocation and replenishment.

Emergency coordination

Coordination of HEPR systems is critical to systematically marshal and deploy the appropriate resources (knowledge and data, financial, materiel, technical and operational) to prepare for, prevent, detect, alert, and respond rapidly to any health emergency. Effective coordination enables all the other sub-systems to deliver on their potential. At all levels of organization, accountable leadership must be underpinned by effective multisectoral and multidisciplinary coordination, particularly in incident management of acute response and broader health emergency workforce development.

Emergency coordination should draw on health emergency alert and response teams that are interoperable and rapidly deployable; coherent national action plans for preparedness, prevention, risk reduction and operational readiness; and scalable health emergency response coordination through a standardized and commonly applied emergency response framework.

5. 1 Health emergency alert and response teams that are interoperable and rapidly deployable

Health emergency alert and response teams should constitute a global, professional and interoperable network that is ready to respond to health emergencies worldwide. The concept of such a global health emergency workforce builds on existing global, regional, and national organisations and networks. Alert and response teams would strengthen national capacities for readiness and response, be locally embedded and locally responsive, while being globally coordinated and able to deploy regionally and internationally. The broader public health emergency workforce requires training and equipping to ensure a strong pipeline of team members. Teams would be well-trained and ready to investigate and respond effectively to public health emergencies wherever they arise, at the same time as supporting local public health capacity outside of emergencies. National teams would be representative of and trusted by the communities they serve.

Key capacities include:

- **Common standards for interoperable health emergency alert and response teams**
  Ensuring interoperability of alert and response teams relies on common global standards and certification. Operating procedures and multidisciplinary team composition should be adapted for various emergency scenarios.
- **Trained, equipped, and expanded global, regional, and national networks**
  Ensuring a well-trained, professional, multi-sectoral and equipped alert and response teams that strengthens existing networks (such as GOARN, EMTs, GHC) requires an understanding of existing networks and what they can deliver, along with adequate support and financing. Additional training and equipment will expand existing national, regional, and global alert and response networks.
- **Scaled coordination and support for team deployment**
  Rapid international and national deployments of teams would be facilitated by standardized protocols, operating guidelines and activation procedures and mechanisms. Deployment should be based on alert definitions at global, regional, national and local levels; specify team configurations adapted to respond to specific alerts; call on up-to-date registries of experts; coordinated processes for employment. Support for deployment should draw on contingency planning, including rapidly available financing. Post-deployment debriefing and support should be mandatory.
- **Evidence-based learning and development**
  Measuring impact and effectiveness of teams requires ongoing monitoring of progress and fostering a community of practice, codifying learnings, and sharing best practices, tools and resources. Action plans should be refined and adapted rapidly on the basis of insights from the field. Infrastructure to enable information management, including databases and platforms for effective networking and knowledge sharing, will need to be developed and maintained.

5.2 Coherent, resourced national action plans for health security

Coherent national action plans for health security (NAPHS) are critical for maintaining and strengthening IHR (2005) capacities and progressing towards the effective prevention, detection and mitigation of health emergency threats, as well as the immediate response to and recovery from them. Comprehensive multisectoral planning should be integrated within national health systems planning. Prevention and readiness, including the routine integration of One Health approaches and scaled-up vaccine coverage of high-priority groups for epidemic or pandemic prone diseases, must be a cornerstone of HEPR. At the national level, authorities should align their NAPHS or equivalent with broader cross-government One Health and whole-of-government strategies, engaging with key stakeholders such as national parliaments. Planning and activities to ensure operational readiness should be driven by regular assessment of risks and vulnerabilities at national and subnational levels. Operational capacities should be prioritized and tested on a dynamic basis as risks and vulnerabilities evolve over time.

Key capacities include:

- **Standardized assessment of preparedness capacities**
  Transparent peer-reviewed processes are needed to assess national capacity as part of dynamic monitoring. Assessments can include IHR monitoring and evaluation processes, including the Universal Health and

Preparedness Reviews, which augment voluntary Joint External Evaluations, and State Party Self-Assessment Annual Reports. National capacity assessments are essential to inform NAPHS.

- **Updated threat and vulnerability mapping and risk identification**

  National planning efforts should be based on context-specific, up-to-date threat and vulnerability mapping, including tools such as the Strategic Tool for Assessing Risks (STAR) methodology to conduct strategic risk assessments and forecasting, which in turn serve as a basis for NAPHS and their equivalents. These should link to broader national frameworks of risk reduction (e.g., Sendai Framework for Disaster Risk Reduction including climate and economic risks).

- **Development of prioritized, costed national plans for risk reduction, prevention, and readiness**

  NAPHS and their equivalents play an important role in setting country-wide priorities and facilitating and supporting multisector engagement, including civil society, the private sector, military, academia, the media and communities. NAPHS integrate One Health approaches, and establish costed plans and cross-government strategies to guide investments in national systems. Costing should account for required one-off investments and recurring costs, including core capacity building for risk reduction. NAPHS should be integrated within broader national health and disaster management strategies.

- **Mapping gaps and mobilizing technical and financial resources**

  The development and implementation of NAPHS and their equivalents can unite a broad range of technical, operational and financial support behind a single coherent national vision on health security. It supports the planning and strengthening of sustainable preparedness capacities, identifying resources within and beyond the health security agenda. It needs to be aligned with national health policies and strategies including annual planning and budgeting cycles. It can increase and/or improve better use of domestic budget, while offering a unified vision for gap filling catalytic funding. Strengthened resource mobilization and dynamic monitoring of implementation can support greater national leadership, governance, and international solidarity for preparedness, while ensuring alignment with broader health system priorities.

- **Simulation exercises to strengthen readiness and mobilization of resources**

  Simulation exercises, coupled with after-action reviews, and dynamic preparedness and risk assessments, can strengthen resource mobilization and implementation. Continuous pressure testing and simulation training can support greater national leadership, governance, and international solidarity for preparedness, readiness and response, while ensuring alignment with broader health system priorities. Translating learnings from exercises and reviews into NAPHS and their equivalents can increase accountability and transparency.

5.3 Scalable health emergency response coordination through standardized and commonly applied emergency response framework

Pre-existing coordination mechanisms should facilitate whole-of-government and whole-of-society responses to emergencies, including multifaceted crises such as COVID-19. Integration and coordination between different capacity-strengthening initiatives across the health emergency cycle can enhance coherence at national level. Particularly in acute response incident management, accountable leadership must be underpinned by effective multisectoral and multidisciplinary coordination and bringing together core partners for health emergency response under government leadership.

WHO's Emergency Response Framework (ERF) provides guidelines, operational criteria and standards from early detection, verification, risk assessment (of acute events), situational analysis (for protracted emergencies), grading and response coordination (through the incident management system). Applying a similarly standardized and commonly applied framework globally could enhance alignment and strengthen preparedness and response. Specific roles and responsibilities should be defined for each HEPR partner, strengthening and building on existing networks.

Key capacities include:

- **Timely verification, investigation, and risk assessment of alerts**

  Early warning and surveillance should be anchored on the systematic collection, analysis and communication of any information used to detect, verify, and investigate events and health risks. Data should be rapidly disseminated and based on alert triggers, establish, strengthen and operationalize rapid response teams that are responsible for the rapid investigation of alerts, field risk assessment and, when required, early operational response.

- **Rapidly scalable, adaptable, and interconnected emergency coordination structures**

  Standardized and commonly applied emergency response framework agreements can enhance scalability and coordination of the health emergency response. Grading is an internal activation procedure that triggers emergency procedures and activities for the management of the response, indicating the level of operational response and financing required. This includes pre-defined incident management support team (IMST) and emergency coordination structure scale-up. Coordination and leadership capacities at national level can be further reinforced through Public Health Emergency Operation Centers (PHEOCs).

- **Prompt synthesis and dissemination of key evidence to inform action**

  Building and sustaining knowledge management can uphold standards of quality before, during, and after health emergencies. Knowledge management depends on maintinaing access to a network of experts,

the timely synthesis of evidence into key insights to drive action and policy, and broad dissemination. Development of rapid feedback loops to adjust plans, build specific capacities, and support a culture of continuous improvement can strengthen preparedness and response for a given event.

- **Strengthened development mobilization and monitoring of strategies, plans and financing for emergency operations**

  IMST and EOCs are responsible for emergency planning, and rapidly developing and mobilizing necessary strategies and financing. Ongoing collaboration with international, national and community actors can ensure effective, scalable coordination of response. Lessons from operational reviews, intra-action reviews and debriefs at global/regional/national levels should inform course correction of emergency operations. Progress against pre-agreed and regularly reviewed indicators should systematically track implementation towards the objectives of the operational response plan.

- **Operations, support and logistics**

  Management of operations and logistics includes human resources, finances, infrastructure, logistics and supplies which helps ensure standardized emergency response. Rapid and scalable responses require rapid supply, rapid deployment of teams, and safety and security including protection from sexual exploitation and abuse a. Best practices and standards can strengthen interoperability through unified tools and systems.

Annex 2: Application of principles of equity, inclusivity, and coherence

Equity, inclusivity, and coherence are goals as well as principles. Only in applying them consistently and rigorously in the design and operations of the HEPR architecture at all levels, and monitoring their application, will we achieve the outcomes we seek.

The following table demonstrates how these principles can be applied and monitored across the ten proposals for strengthening the global architecture of HEPR.

Pillars	Proposal	Application of principles
Governance	**Proposal 1.** Establish a Global Health Emergency Council and committee for emergencies of the World Health Assembly	• Alignment with the Constitution and governance of WHO • Broad multi-sectoral and multistakeholder engagement to inform agendas • Gender equity and diversity in membership and leadership
	Proposal 2. Make targeted amendments to the International Health Regulations (2005)	• Alignment of regulatory frameworks relevant to HEPR, including IHR, proposed pandemic accord, Nagoya protocol, TRIPS and BWC
	Proposal 3. Scale-up Universal Health and Preparedness Reviews and strengthen independent monitoring	• Whole of government and whole of society engagement in dialogue and assessments • Peer assessment to build solidarity, mutual trust, and accountability for health • National assessments linked to national action plans for health security (NAPHS), with financing, implementation and monitoring • Harmonization and alignment of multisectoral monitoring frameworks for HEPR across the spectrum of prevention, preparedness, response, and recovery
Systems	**Proposal 4.** Strengthen global health alert and response teams that are trained to common standards, interoperable, rapidly deployable, scalable and equipped	• Multidisciplinary health emergency workforce reflecting the cultural, ethnic, and racial diversity of the communities it serves • Workforce drawn from and fully integrated into national health systems and other relevant One Health sectors • Application of a gender lens to strategic priorities and policies
	Proposal 5. Strengthen health emergency coordination through standardized approaches to strategic planning, financing, operations and monitoring of health emergency preparedness and response	• Interdependence and interoperability of health emergency coordination hubs with common standards and operating framework • Health emergency management embedded in broader whole-of-government national disaster management systems
	Proposal 6. Expand partnerships and strengthen networls for a whole-of-society approach to collaborative surveillance, community protection, clinical care, and access to countermeasures	• Equitable sharing of benefits, including allocation and access to countermeasures for HEPR within and among Member States • Meaningful engagement of communities and civil society in HEPR at all levels • Effective collaboration between national authorities, multilateral organizations and non-State Actors at all levels
Finance	**Proposal 7.** Establish a coordinating platform for financing to promote domestic investment and direct existing and gap-filling international financing to where it is needed most	• Financing priorities aligned with global, regional and national plans and priorities • Inclusive and representative membership of coordinating platform
	Proposal 8. Establish a financial intermediary fund for pandemic preparedness and response to provide catalytic and gap-filling funding	• Contributions based on burden sharing among all Member States, with additional contributions from non-State Actors • Allocations aligned with global and national priorities and plans • Financing gaps filled for low-income and lower middle-income countries • Non-competitive with and supportive of existing financing instruments for HEPR • Governance inclusive of contributors and beneficiaries
	Proposal 9. Expand the WHO Contingency Fund for Emergencies to ensure rapidly scalable financing for response	• Financing for national and international partners aligned with responsibilities within common emergency response framework • Implementing mechanisms link financing to impact, especially among the most vulnerable
Equity, inclusivity, and coherence	**Proposal 10.** Strengthen WHO at the centre of the global HEPR architecture	• Adoption of a pandemic accord as an overarching framework for an equitable, inclusive and coherent architecture of HEPR • Sustainable financing to better align the mandate of WHO with planning and implementation

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