



Editorial

From Reaction to Resilience: The WHO Pandemic Agreement as a Blueprint for Global Health Equity

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In May 2025, 124 WHO Member States adopted the first-ever Pandemic Agreement, rooted in principles of human dignity, equity, solidarity, and sovereignty, at the 78th World Health Assembly [1]. The COVID-19 pandemic exposed how unprepared the world was to face a pandemic and resistant to sharing [2,3]. From vaccine nationalism to fractured supply chains and the marginalization of low- and middle-income countries (LMICs) in scientific discovery and access, the world was caught flat-footed, despite prior warnings [4,5]. The three years that it has taken to sign this agreement is testimony of the complexity of the issues and how laborious it has been to muster dissenting views, interests and motivations.

The WHO Pandemic Agreement outlines a new architecture for global solidarity in times of crisis using several core provisions that, if effectively implemented, could significantly improve future pandemic preparedness and response (Table 1). While many commitments remain “voluntary” and “on mutually agreed terms”, it represents a foundational shift away from fragmented global responses and towards a legally backed, accountable, and inclusive structure that aspires to institutionalize the hard lessons learned from COVID-19. It reflects a critical recognition that health equity and timely access to countermeasures during an emergency can-

not be left to geopolitical and commercial power dynamics. Here, we highlight some of the prominent elements of the agreement and discuss outstanding challenges.

Article 12 of the Agreement outlines the Pathogen Access and Benefit-Sharing (PABS) system, an important component of the framework. PABS links access to (the sequence and/or samples of) emerging pathogens with epidemic potential to commitments on sharing the benefits of research and development (R&D) based on those pathogens. It obligates participating manufacturers to allocate 20% of pandemic-related health products, half as donations and half at affordable pricing, for WHO-led distribution based on global need. This proposed mechanism, which was hotly debated during the negotiations and is currently relegated to an unfinished annex, is meant to address the vaccine inequity witnessed during COVID-19 and to improve access in LMICs. However, finalizing the annex and building a legally enforceable and transparent process for pathogen and benefit sharing will be challenging, and does not solve the continued dependency of LMICs on higher income countries for innovation.

Another landmark shift is Article 9 which centers equity within global R&D. It champions inclusive scientific partnerships, promotes open-access knowledge sharing, and commits to transparency in clinical trials. It implicitly challenges the dominant paradigm whereby commercial return eclipses global need, and where the Global South is viewed as a site of risk rather than of a

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Table 1
Core components and provisions of the WHO Pandemic Agreement.

Domain of Action	Key Provisions and Commitments	Relevant Article(s)	Intended Purpose and Implications
Equitable Access to Health Tools	Creation of a Pathogen Access and <i>Benefit-Sharing System (PABS)</i> to facilitate timely sharing of biological materials and genetic sequence data. 20% of real-time production (10% donation, 10% affordable pricing) reserved for WHO during a pandemic.	12	Promotes fair and timely access to vaccines, diagnostics, and therapeutics, especially for LMICs.
Surveillance and Early Warning Systems	Strengthening multisectoral surveillance and early detection at community and national levels. Emphasis on risk assessment, lab capacities, and coordinated data sharing.	4	Enhances outbreak detection, risk assessment, and rapid international response cooperation
Research and Development Collaboration	Inclusive global R&D networks, especially involving LMIC institutions. Open science, clinical trial transparency, and provisions for equitable access in public-funded R&D.	9	Encourages collaborative innovation while safeguarding global equity in product development and access
Health Systems Strengthening	Resilient systems focusing on primary care, mental health, and essential services. Lab networks, procurement, recovery, and data systems are prioritized.	6	Embeds pandemic response in broader universal health coverage (UHC) and long-term health infrastructure resilience
Workforce Development and Protection	Domestic and international workforce deployment coordination. Health worker safety, decent work, and gender equity provisions.	7	Builds sustainable, protected gender-responsive health workforce for emergencies
Technology Transfer and Local Production	Voluntary licensing, public sector investment, and regional manufacturing hubs supported. Global technology and knowledge-sharing frameworks promoted.	10-11	Boosts manufacturing capacity in LMICs, decentralizing production and fosters sustainable innovation
Sustainable Financing	Creation of a global financial coordination mechanism. Encourages domestic resource mobilization and support for LMIC readiness.	18	Provides predictable and equitable financing for pandemic preparedness and response.
Whole-of-Government & Community Engagement	Multisectoral national plans, stakeholder inclusion, and pandemic literacy. National mechanisms for communication, equity, and mitigation of socioeconomic impacts.	15-16	Fosters inclusive, coordinated responses grounded in trust and community engagement.
Governance and Accountability	Establishment of a Conference of the Parties (COP) to oversee implementation. Independent monitoring, periodic review, and transparent reporting.	19-21	Ensures robust oversight, peer accountability, and transparency across member state

wealth of expertise. By elevating the principles of shared knowledge and collective benefit, the Agreement reimagines R&D for which equity is not a postscript, but an important founding tenet. It attempts on the one hand to correct the fragmented and competitive R&D landscape during COVID-19, which limited knowledge sharing and delayed access to innovations, and on the other hand to rebalance the global R&D ecosystem, which has often prioritized high-income country (HIC) health needs, commercial returns and geopolitical influence over global public health benefit [6]. Moreover, it signals an intent to move beyond "charity-based" models of access toward a rights-based framework that values LMICs not only as recipients but also as originators and co-creators of knowledge, data, and innovation. However, like most of the Pandemic Agreement, commitments under article 9 remain largely voluntary.

Articles 6 and 7 are about the importance of strengthening national health systems. Primary care, laboratory networks, and the health workforce form the bedrock of any effective response. Yet these were precisely the areas that were under-resourced and overburdened during the last pandemic. Healthcare workers of whom many are women, bore the brunt of this failure. Burnout, illness, and in far too many cases, death, became the cost of systemic neglect. The Agreement includes provisions for workforce training, protection, and mental health support, emphasizing decent work conditions and equitable pay. It also calls for fair migration policies and cross-border workforce investment, especially for regions facing acute healthcare worker shortages, a priority also reflected in recent initiatives such as the Pandemic Fund [7]. In doing so, it

signals a recognition that human infrastructure is as vital as technological innovation in safeguarding global health.

One critical lesson from COVID-19 is that concentration of manufacturing capacity breeds fragility. The Pandemic Agreement's Articles 10 and 11 encourages (voluntary) technology transfer and investments to decentralize production capacity, particularly in LMICs. The Agreement envisions a future when Africa, Asia, and Latin America are not just recipients at the end of the queue, but are equipped and able to drive and prioritize manufacturing to address their own needs. However, this will require multiple practical enablers, including pooled procurement, harmonized regulation, and access to finance. Most importantly, innovators and experienced manufacturers must share critical technologies with emerging developers and manufacturers in the Global South, including the freedom to operate without intellectual property barriers to adopt these technologies and address local and regional health needs [8]. An inspiring example is the WHO/ Medicines Patent Pool (MPP)-coordinated mRNA technology transfer program with its Hub in South Africa and 15 MIC manufacturers, and other manufacturing initiatives in Senegal and Rwanda which will require sustained financial and political backing to thrive, not just from donors and development banks, but from African nations and regional blocs [9].

No health system agreement can be developed or sustained without a solid foundation of public financing, which remains a critical issue in this era of austerity [10]. Article 18 introduces a Coordinating Financial Mechanism to support implementation, in resource-limited settings. This platform aims to align funds, spot-

light gaps, and streamline emergency disbursement. However, the erosion of overseas development assistance (ODA), donor fatigue, and the strategic disengagement of key players such as the recent withdrawal of the United States from WHO, threaten the long-term viability of this mechanism. The future demands not sporadic generosity, but institutionalized solidarity: reliable, multilateral investment in surveillance, preparedness, and public goods that transcend borders. Integration with regional funding platforms such as the AFRI-Health Fund or the ASEAN response mechanisms will be important in ensuring responsiveness to local contexts and priorities. It must be part of a much-needed reform of the global finance architecture to address unsustainable debt traps, illicit financial flows, and fair global taxation [11]. Equity in financing is not about charity; it is about shared responsibility for shared risk.

The inclusion of One Health principles in Articles 4 and 5 recognizes that the majority of emerging infectious diseases are zoonotic in origin, yet, our surveillance and prevention strategies largely ignore the close interactions between human, animal, and environmental health [12]. The Agreement calls for integrated early warning systems, cross-sectoral cooperation, and investments in biosafety, vector control, and environmental stewardship. They require common data platforms, interdisciplinary training, and investment in neglected systems such as veterinary and ecological health infrastructure. Climate change, urban expansion, and ecological degradation are upstream determinants of future pandemics. Addressing them will require policy alignment, the development of common data platforms, integrated training, and equitable investment in environmental and veterinary systems.

Pandemic preparedness has historically suffered from the cycle of panic and neglect. The Agreement attempts to break this cycle through the creation of a Conference of the Parties (COP) which is a governance structure that borrows from the climate arena to keep political focus on pandemic threats. The COP will oversee implementation, monitor progress, and promote accountability through regular reporting and peer review.

So, there is progress, promise, and still challenges. Key among them are ensuring timely ratification, sustainable financing, operationalizing the PABS system, effective technology transfer, access commitments in R&D – all contingent upon, the political will necessary for implementation, given the mostly voluntary nature of most commitments. The absence of the United States highlights geopolitical risks and underscores the importance of increased commitments from other countries, and possibly opportunities for middle-powers to come to the fore and break the cycle of dependency.

The adoption of the WHO Pandemic Agreement marks a turning point in global health, shifting the focus from reactive crisis management to a more structured and equitable approach to preparedness. However, its value will be determined not by its signing, but by the actions that follow. Without waiting for its ratification, and to avoid repeating the failures of COVID-19, the Agreement must be implemented with genuine political will, inclusive leadership, and a commitment to equity in both principle and practice. The hard work begins now, to ensure that science without borders is developed with LMICs not as passive beneficiaries but as co-creators and global health leaders. The failures of the COVID-19 pandemic demand that the WHO Pandemic Agreement is honored in both

word and spirit, to ensure that it becomes the cornerstone of that much needed transformation.

Declaration of competing interest

The authors declare no conflicts of interest

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References

- [1] World Health Organization *World Health Assembly adopts historic Pandemic Agreement to make the world more equitable and safer from future pandemics*. Geneva: WHO; 2025. [cited 2025 May 31]. Available from: <https://www.who.int/news/item/20-05-2025-world-health-assembly-adopts-historic-pandemic-agreement-to-make-the-world-more-equitable-and-safer-from-future-pandemics>
- [2] Lal A, Erond NA, Heymann DL, Gitahi G, Yates R. Fragmented health systems in COVID-19: rectifying the misalignment between global health security and universal health coverage. *Lancet* 2021;**397**(10268):61–7.
- [3] Sachs JD, Karim SSA, Akinin L, Allen J, Brosbøl K, Colombo F, et al. The Lancet Commission on lessons for the future from the COVID-19 pandemic. *Lancet* 2022;**400**(10359):1224–80.
- [4] Hui DS, Yeboah-Manu D, Nachega JB, Rodriguez-Morales AJ, Traore T, Maeurer M, et al. 5 years of COVID-19: equity must lead the next pandemic response in a fractured multipolar world. *Lancet Respir Med* 2025;**13**(1):11–14.
- [5] Nsanzimana S, Rawat A, Wilson LA, Forrest JL, Reis G, Ramagopalan S, et al. Toward a new paradigm of North–South and South–South partnerships for pandemic preparedness: lessons learned from COVID-19 and other outbreaks. *Am J Trop Med Hyg* 2022;**107**(6):1162.
- [6] Torreele E, Boum Y, Adjaho I, Alé FGB, Issoufou SH, Harazi G, et al. Break-through treatments for Ebola virus disease, but no access—what went wrong, and how can we do better? *Lancet Infect Dis* 2023;**23**(7):e253–8.
- [7] The Pandemic Fund *The Pandemic Fund* [cited 2025 May 31]. Available from: <https://www.thepandemicfund.org/>.
- [8] Torreele E, Wolfe D, Kazatchkine M, Sall A, Ruxrungtham K, Fitchett JRA, et al. From private incentives to public health need: rethinking research and development for pandemic preparedness. *Lancet Glob Health* 2023;**11**(10):e1658–66.
- [9] World Health Organization *The mRNA vaccine technology transfer programme*. Geneva: WHO; 2025. [cited 2025 May 31]. Available from: [https://www.who.int/initiatives/mrna-technology-transfer-\(mrna-tt\)-programme](https://www.who.int/initiatives/mrna-technology-transfer-(mrna-tt)-programme)
- [10] Hanson K, Brikci N, Erlangga D, Alebachew A, De Allegri M, Balabanova D, et al. The Lancet Global Health Commission on financing primary health care: putting people at the centre. *Lancet Glob Health* 2022;**10**(5):e715–72.
- [11] Geneva Global Health Hub (G2H2) *Financial justice for pandemic prevention, preparedness and response*. Geneva: G2H2; 2022. [cited 2025 May 31]. Available from: <https://g2h2.org/wp-content/uploads/2022/11/G2H2-Report-2022.pdf>
- [12] Traore T, Shanks S, Haider N, Ahmed K, Jain V, Rüegg SR, et al. How prepared is the world? Identifying weaknesses in existing assessment frameworks for global health security through a One Health approach. *Lancet* 2023;**401**(10377):673–87.