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The values and risks of an Intergovernmental Panel for One Health to strengthen pandemic prevention, preparedness, and response

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The COVID-19 pandemic has shown the need for better global governance of pandemic prevention, preparedness, and response (PPR) and has emphasised the importance of organised knowledge production and uptake. In this Health Policy, we assess the potential values and risks of establishing an Intergovernmental Panel for One Health (IPOH). Similar to the Intergovernmental Panel on Climate Change, an IPOH would facilitate knowledge uptake in policy making via a multisectoral approach, and hence support the addressing of infectious disease emergence and re-emergence at the human–animal–environment interface. The potential benefits to pandemic PPR include a clear, unified, and authoritative voice from the scientific community, support to help donors and institutions to prioritise their investments, evidence-based policies for implementation, and guidance on defragmenting the global health system. Potential risks include a scope not encompassing all pandemic origins, unclear efficacy in fostering knowledge uptake by policy makers, potentially inadequate speed in facilitating response efforts, and coordination challenges among an already dense set of stakeholders. We recommend weighing these factors when designing institutional reforms for a more effective global health system.

Introduction

The COVID-19 pandemic has shown the need for more effective global governance of pandemic prevention, preparedness, and response (PPR) and has highlighted the importance of a strengthened organisation of knowledge production and uptake.^{1,2} Multilateral high-level and expert reviews identified slow response, insufficient political commitment, scarcity of funding, and poor coordination as challenges of the current global health system.^{3–5} Furthermore, experts highlighted the interdependence of human, animal, and environmental health as crucial to the emergence and re-emergence of pathogens, stressing the need for multisectoral, collaborative approaches to the design and implementation of research, policies, and programmes for effective pandemic PPR—ie, a One Health approach.^{6–10}

Multilateral organisations have indeed undertaken initiatives to operationalise One Health to strengthen the governance and knowledge production for pandemic PPR.^{11,12} Several existing and emerging governance and funding instruments now integrate a One Health approach and have formulated further One Health needs and recommendations (table 1). Scholars and practitioners put forward proposals for the creation of new intergovernmental science–policy platforms to tackle multidimensional One Health challenges, such as extreme weather and environmental degradation, food safety and nutrition security, emerging and endemic infectious diseases, and antimicrobial resistance (appendix pp 1–2).¹

In this Health Policy, we examine the values and risks of setting up an Intergovernmental Panel for One Health (IPOH) in relation to pandemic PPR. The work investigates the possible form an IPOH could take and discusses its relationship with the existing global health system.

Possible mandate, ecosystem, and design of an IPOH

The mandate of an IPOH would draw from the needs and recommendations put forward by key stakeholders (table 1)—not limited to pandemic risk—and the activities proposed by scholars and experts to fulfil them (appendix pp 1–2). In relation to pandemic PPR, the IPOH would encompass two primary functions. First, it would be responsible for synthesising knowledge from a One Health perspective. In the context of PPR, this work would generate insights into the prevention and risk of emergence, re-emergence, and spread of infectious diseases at the interface between humans, animals, and the environment (eg, pathogens of concern, drivers of zoonotic spillover, outbreak hotspots, and early detection of pathogen emergence), assess evidence on policy recommendations, and define research gaps. Second, the IPOH would support actions contributing to pandemic PPR. This work would include engaging in knowledge dissemination and support capacity-building efforts for One Health. Efforts could include encouraging data and knowledge sharing between member states, and promoting best practices for One Health approaches to national PPR plans, collaborative surveillance, and pandemic intelligence, including multisectoral, coordinated, interoperable, and integrated disease, vulnerability, and threat surveillance.²

The institutional design of an IPOH could draw on experiences of existing science–policy panels, such as the Intergovernmental Panel on Climate Change (IPCC)¹⁷ and the Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES; appendix p 2), and of the ongoing establishment process of the intergovernmental science–policy panel on chemicals,

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See Online for appendix

waste, and pollution prevention.¹⁸ These models are fundamentally different from instruments oriented towards policy design, such as the Intergovernmental Negotiation Body for the WHO CA+ pandemic instrument, which is made up of delegates representing member states and UN agencies.¹³ The IPCC and IPBES have played and are playing a fundamental role in providing impartial scientific assessments, including policy-relevant options, to inform global climate and biodiversity governance. The IPBES also offers a model that integrates different forms of knowledge, including from Indigenous Peoples and local and marginalised communities, which are crucial for the insights an IPOH would contribute to. For example, the formulation of adapted pandemic response strategies to different vulnerable groups has proved important, albeit absent in many national PPR plans, and requires different forms of knowledge.¹⁹

For an IPOH to have practical impacts, it would need to be integrated into legally binding international treaties,²⁰ such as the forthcoming WHO CA+ pandemic instrument (subject to the materialisation of current negotiations), the UN Framework Convention on Climate Change (UNFCCC), and the Convention on Biological Diversity (appendix p 3). The IPOH would also need to coordinate and create synergies with other international actors and policy arenas such as the World Health Assembly, the Quadripartite (ie, a partnership between the Food and Agriculture Organization of the UN, the UN Environment Programme, WHO, and the World Organisation for Animal Health), and the World Bank, as well as other

funding agencies, private organisations (eg, pharmaceutical companies), and local and regional actors (table 2).

The One Health High-Level Expert Panel (OHHLEP), established by the Quadripartite in 2021, already partly fulfils the proposed IPOH mandate by providing knowledge and evidence assessment, guideline development, and implementation guidance for One Health.^{12,21} The OHHLEP currently has 26 volunteer experts and a rotating secretariat among the Quadripartite organisations, and focuses on translating knowledge into policy advice. An IPOH would grow from the OHHLEP and offer additional legitimacy. First, an IPOH would engage the wider scientific community worldwide and experts from industry and civil society organisations, operating at a scale similar to that of the IPCC and IPBES. For instance, more than 12 000 experts from more than 190 countries participated in the IPCC's 6th assessment report. Second, an IPOH would interact with many more policy institutions at national and international levels, whereas OHHLEP primarily reports to the Quadripartite. Third, an IPOH would translate policy needs into research directions to be addressed by the wider scientific community. Finally, an IPOH would rely on dedicated staff members, a governance structure, and additional financial resources. Drawing from the recent annual budgets of the IPCC and IPBES, the yearly cost of an IPOH would be US\$5–10 million, with a substantial amount designated to support scientists and policy actors in low-income and middle-income countries to participate.

	Purpose of the instrument	One Health needs and recommendations
Potential international pandemic instrument (WHO CA+) ¹³	To achieve greater equity and effectiveness for pandemic prevention, preparedness, and response through national and international cooperation	Produce evidence on drivers of the emergence and re-emergence of disease at the human–animal–environment interface, including but not limited to climate change, land-use change, wildlife trade, desertification, and antimicrobial resistance, which can contribute to prevention, preparedness, and response plans and interventions; increase capacity building for One Health; strengthen multisectoral, coordinated, interoperable, and integrated One Health surveillance systems
International Health Regulations reform ¹⁴	To define countries' rights and obligations in handling public health events and emergencies that have the potential to spread	Increase capacity building to rapidly detect, assess, notify, and respond to unusual health events of potential international concern; foster inclusion of human, animal, and environmental health actors in solution design; monitor and evaluate International Health Regulations implementation based on One Health
WHO and World Bank Global Preparedness and Monitoring Board ¹⁵	To provide an independent and comprehensive appraisal for policy makers and the world about progress towards increased preparedness and response capacity for disease outbreaks and other emergencies with health consequences	Coordinate between human, animal, and environmental health actors; foster stronger mechanisms to translate interdisciplinary science into action; build systems to predict, prevent, identify, and detect the emergence of pathogens with pandemic potential based on a One Health approach; build a One Health, real-time surveillance platform with mechanisms for sharing data and samples coupled with adequate benefit sharing including capacity building, training, and knowledge and technology transfers
World Bank Financial Intermediary Fund for pandemic prevention, preparedness, and response ¹⁶	To finance crucial investments to strengthen pandemic prevention, preparedness, and response capacities at regional, national, and global levels, with a focus on low-income and middle-income countries	Produce evidence to justify funding to projects that coordinate between human, animal, and environmental health actors
One Health Joint Plan of Action ¹¹	To coordinate between the Food and Agriculture Organization of the UN, UN Environment Programme, World Organisation for Animal Health, and WHO, and support global efforts to operationalise the One Health approach	Foster global governance in One Health and the development of a sustainable resource mobilisation strategy; produce evidence (eg, understanding of drivers of emerging infectious diseases) to justify funding to operate at scale and in a cross-sectoral way; provide upstream policy and legislation advice and technical assistance to help set national targets and priorities across the sectors for the development and implementation of One Health legislation, initiatives, and programmes; promote awareness, policy changes, capacity building, and action coordination among stakeholders to ensure that humans, animals, and ecosystems achieve health

Table 1: Needs and recommendations to further operationalise One Health expressed by existing and emerging instruments

	Examples or specification	Role	Interaction with IPOH
Quadripartite	Food and Agriculture Organization of the UN, UN Environment Programme, WHO, and World Organisation for Animal Health	Provide technical expertise, set global standards, and coordinate with national governments to implement strategies to prevent and control the spread of diseases	Inform and support the Quadripartite on implementing and promoting One Health in their international guidance and standards for PPR policies, disease, threat, and vulnerability surveillance systems, and collaborative surveillance; provide synthesis and assessments of multisectoral scientific knowledge and evidence, guidance development, and risk assessment; coordinate science-policy efforts to prevent emerging infectious diseases, including those of zoonotic origin, and respond and prepare for pandemics, in particular with the WHO Hub for Pandemic and Epidemic Intelligence
Other intergovernmental organisations	World Bank, International Monetary Fund, UNDP, UNICEF, and European Centre for Disease Prevention and Control	Provide financial and technical support for the prevention of emerging infectious diseases and pandemic PPR at regional, national, and international levels; promote global health equity and address underlying social and economic factors that contribute to emerging infectious disease outbreaks and pandemics	Identify gaps and priorities in One Health resources to support effective allocation of funding to the prevention of emerging infectious diseases and pandemic PPR; collaborate with these organisations to ensure a coordinated investment of funding and technical expertise to implement One Health strategies for PPR and to promote One Health approaches in their respective areas of work
National governments	Ministries of health, ministries of agriculture and animal welfare, ministries of economic affairs, and ministries of environment	Implement policies and strategies to prevent and control the spread of infectious diseases within their borders; develop national pandemic preparedness plans	Receive guidance from national governments on areas of priority and scope of work; inform national and subnational actors about the need for and urgency of funding and implementing PPR plans and surveillance systems with and through a One Health approach where appropriate; provide technical expertise and guidance to improve coordination and effectiveness of science-policy efforts to prevent emerging infectious diseases and pandemic PPR
Regional and global One Health and PPR initiatives	Africa One Health Network, Preventing Zoonotic Disease Emergence, and Global Virome Project	Understand the risk of emerging infectious disease at the human-animal-environment interface; train One Health workforce in best practices surveillance and biosecurity; develop and promote a One Health approach to the prevention of emerging infectious diseases and pandemic PPR	Engage with experts from regional and global networks in evidence generation (eg, by communicating knowledge gaps and research directions and needs), and in knowledge and evidence synthesis and assessments; collaborate to promote One Health approaches at regional and global levels
Foundations, trusts, and other philanthropic organisations	Bill & Melinda Gates Foundation, The Rockefeller Foundation, and Wellcome	Provide funding for the prevention of emerging infectious diseases and pandemic PPR, and for research and development of vaccines and treatments	Collaborate with these organisations by communicating crucial knowledge gaps for guiding their action and funding programmes to the prevention of emerging infectious diseases and pandemic PPR
Informal state groupings	Group of 7, Group of 20, and World Bank	Influence global health policies and strategies	Interact with these groups to promote One Health approaches at the global level, and to communicate the needs for increased funding and resources to the prevention of emerging infectious disease and pandemic PPR
Global civil society organisations	Médecins Sans Frontières, Oxfam International, People's Health Movement, and HealthforAnimals	Provide humanitarian aid and advocacy for global health issues and social and economic factors that contribute to emerging infectious disease outbreaks and pandemics	Collaborate with these organisations to leverage their expertise and advocacy efforts in evidence generation, and inform the design and implementation of local and regional One Health interventions; engage in knowledge and evidence synthesis and assessments where relevant
Private industries	Pharmaceutical companies and biotechnology companies	Develop and produce vaccines, treatments, and other medical supplies	Collaborate on evidence generation and research and development, and share data and expertise; engage in knowledge and evidence synthesis and assessments where relevant
Educational bodies, academic institutions, and networks	Centers for Research in Emerging Infectious Diseases Network, university networks, and individual academics	Do research, provide education and training, and inform public policy and practice	Incorporate their research, expertise, and training; collaborate on knowledge and evidence synthesis and assessments, and interact on evidence generation by communicating knowledge gaps and research directions and needs
Indigenous Peoples and cultural communities	Local communities and ethnic and cultural groups	Have unique knowledge and practices related to health and wellbeing, and face specific vulnerabilities	Incorporate their perspectives and ensure their inclusion in knowledge synthesis and assessments, including through instruments such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services' Local Knowledge Task Force, multistakeholder panels, and peer-review processes
General public	All citizens	Citizen science (eg, informing surveillance on emerging infectious diseases); voicing public trust and opinion regarding government priorities and legitimacy related to PPR	Incorporate their perspectives and focus on assessing legitimacy and political acceptability of policy recommendations; inform them via the media

IPOH=Intergovernmental Panel for One Health. PPR=prevention, preparedness, and response.

Table 2: Actors involved in the prevention of emerging infectious diseases and pandemic PPR and how an IPOH would interact with them

Values and risks of an IPOH

We assessed the values and risks of creating an IPOH against the core areas of evidence-based policy making in international settings.²² These areas include knowledge synthesis, agenda setting, policy design and implementation, and engagement and coordination with existing stakeholders. This analysis aims to

inform where an IPOH could strengthen pandemic PPR, as well as possible areas in which it could not provide effective outcomes. These values and risks can then be cross-referenced with the needs expressed by existing and emerging instruments and scholars (table 1; appendix pp 1–2). Further details on how experiences from existing intergovernmental panels

Panel: Values and risks of creating an Intergovernmental Panel for One Health

Knowledge synthesis

Values

- Provides a clear, unified, and authoritative voice from the scientific community
- Breaks segregated scientific fields and institutions by involving experts from human, animal, and environmental health sectors with equal representation
- Identifies knowledge gaps and prioritisation of research needs
- Fosters collaboration and data and knowledge sharing across borders, contributing to better coordination

Risks

- Subject to governments' directions and priorities in defining the scope of assessments
- Possibly neglects pandemics with technological or security-related origins

Agenda setting

Values

- Provides a legitimate and sustained international information supply that keeps pandemic risk on the political agenda and can intensify advocacy for deep prevention efforts
- Signals policy demand for scientific information and provision of uptake mechanism
- Fosters public awareness and trust, including via media uptake
- Contributes to encoding One Health in the multilateral system, by helping donors and institutions prioritise their work, and helping to mobilise additional funding

Risks

- Potentially not fostering knowledge uptake by policy makers

Policy design and implementation

Values

- Helps to operationalise One Health in multilateral structures and processes
- Promotes coordinated implementation of effective policies between countries and regions by collecting and sharing best practices and assessments of policies and governance structures
- Assesses the efficacy and relevance of policies to inform policy makers
- Strengthens relationships between scientists and policy makers

Risks

- Invests efforts and resources in knowledge assessment and integration, instead of policy action known to be effective
- Might not deliver outcomes fast enough to mitigate future pandemics

Stakeholder engagement and coordination

Values

- Can provide guidance on coordination in an otherwise multilateral fragmented system
- Can develop synergies with regional and national One Health platforms

Risks

- Needs to coordinate with an extensive number of existing organisations with different missions, governance structures, and processes
- Adds marginal value in a dense sector with several existing science-policy mechanisms

have informed our arguments are provided in the appendix (pp 2–3).

We concur that an IPOH could provide most value in knowledge synthesis and in supporting agenda setting, whereas it could potentially face challenges in informing policy design and implementation and in engaging and coordinating with existing stakeholders (panel).

Knowledge synthesis: integrate knowledge for global and national pandemic governance

The OHHLEP and the newly established WHO Hub for Pandemic and Epidemic Intelligence provide examples of recent international efforts to centralise information and guidance for PPR.^{10,23} However, research funding and design for health emergencies remain fragmented, and integrated analysis and use of knowledge and expertise from different fields, including veterinary medicine, environmental sciences, and social sciences, are limited.²⁴

An IPOH would bridge isolated disciplines and institutions by bringing together a wide range of experts from various scientific disciplines, sectors, and countries, as well as existing One Health regional and global networks (table 2). On the basis of the Quadripartite's One Health Joint Plan of Action,¹¹ an IPOH would embrace topics beyond pandemic risks, such as food safety and antimicrobial resistance, to help understand pandemics in a broader context and not as international public health emergencies only. This feature of a broader scope beyond addressing fast-spreading pathogens affecting humans would allow the panel to be flexible and adapt to new threats.

The panel would have a key role in facilitating interdisciplinary, cross-border collaboration and synthesising knowledge relevant to One Health threats by emulating the IPCC and IPBES models. Through calls for experts, peer reviews, task forces, and multistakeholder engagement, an IPOH would ensure the inclusion of all relevant forms of knowledge, including Indigenous knowledge, and the incorporation of perspectives of low-income and middle-income countries. The adoption of robust and credible knowledge assessment processes would limit the interference of political and economic interests in assessments and guidance development, and ensure a transparent, clear, and authoritative voice from the scientific community.

The scope of an IPOH might be limited by its focus on One Health. A panel focusing on One Health might not cover all causes of potential pandemics; in particular, it would primarily consider pandemics from natural origins and a limited set of anthropogenic scenarios including farming, urbanisation, or land-use change. New pandemics might have technological or security-related origins, such as laboratory accidents or the use of chemical or biological weapons.^{25,26} This shortcoming could be mitigated by linking the IPOH with specialised organisations of that field, especially stakeholders of the Biological Weapons Convention and the disaster risk management sector.

Agenda setting: crystallise political attention and strengthen prevention capacity

Sustainable funding allocation to pandemic PPR is vulnerable to rapidly shifting and reactive political attention.²⁷ During the COVID-19 pandemic, most budget allocations focused on response.²⁸ Long-term budget allocations for PPR are scarcely realised, and

political attention is already shifting away from pandemics.¹⁰

By implementing and publishing periodic and ad-hoc interdisciplinary and cross-sectoral knowledge assessments, a form pioneered by the IPCC, an IPOH would help keep pandemics on the political agenda in the long run and before their manifestation. The separation of scientific assessments and political decision making could also enhance trust between scientists, policy makers, and the public, which is crucial before, during, and after emergencies.

Furthermore, by signalling a sustained policy demand for specific knowledge in the corresponding fields, the panel would help shape regional and national research agendas as well as funding allocation. Hence, an IPOH would incentivise the generation of missing evidence that could inform PPR, including a called-for move beyond detecting, towards preventing, zoonotic spillovers, also referred to as deep or primary prevention.^{5,11,29} This link from science to policy would foster the anticipatory capacity of the global health system—eg, through investments in prevention, collaborative surveillance, and better preparedness plans, as recommended by several expert panels and instruments.^{3,5,11,15,19,30,31} Through formal relationships with international legally binding or policy instruments, an IPOH would ensure a continuous dialogue between science and policy, involving member states and actors of the multilateral system, which would give weight to the stated objective of deepening prevention capacity.

Policy design and implementation: assess and promote coordinated One Health interventions

The integration of the One Health concept in the multilateral system is already unfolding, as laid out by the One Health Joint Plan of Action.¹¹ An IPOH would support the Quadripartite efforts and further institutionalise the One Health approach by linking with other global policy frameworks, such as the Sendai Framework for Disaster Risk Reduction, the Kunming–Montreal Global Biodiversity Framework, and the Agreement on the Application of Sanitary and Phytosanitary Measures. The panel would also enhance existing mechanisms such as the Global Preparedness Monitoring Board and the Global Health Threats Fund (tables 1, 2).³²

An IPOH could foster evidence-based policy development and implementation at regional, national, and international levels. By collecting and sharing best practices and assessing policy options in various contexts, the panel could support existing national and international organisations and governments on, for example, One Health governance structures and legislation for the enhancement of integrated surveillance and early-warning systems for future pandemic intelligence.^{2,12}

However, providing more information alone is not enough (eg, the case of the IPCC,³³ whose reports took

years to inform policy action). Setting up an IPOH without additional measures on policy uptake might lead to a strong focus on analysing more information, while existing knowledge could inform preventive actions. Before the COVID-19 pandemic, extensive information on the origins and consequences of potential pandemics, including those of zoonotic origin, was available. Such a pandemic, at least in nature, was predicted.³⁴ Previous pandemics have not resulted in sufficient uptake of recommended actions to improve pandemic preparedness.³ Although One Health provides a more accurate picture of the systemic nature of pandemics from natural origins, an IPOH alone would not necessarily lead to the corresponding action.

With limited time and resources, focusing on improving policy development and implementation with existing mechanisms might be more effective. Building on existing organisational structures might be in line with, and follow from, WHO's pending proposal framework for strengthening the governance and financing of the global architecture for health emergency preparedness, response, and resilience. The proposed framework aims for a core role and a more financially resourced WHO to improve operational readiness and capacities of the global health architecture, and includes the operationalisation of One Health as a key component.⁵ The resources—probably provided by member states—to help create an IPOH could instead prioritise investments in existing health systems, including the improvement of diagnostics, surveillance, and early warning.

Stakeholder engagement and coordination: fit with the global health landscape

The field of assessment and response guidance for global health has already established technical entities that are committed to One Health. The Quadripartite and many other regional and national public health institutes have contributed to the implementation of the One Health approach (tables 1, 2).²¹ Therefore, an IPOH would need to fit and operate within this dense ecosystem.

An IPOH designed as a combination of the strengths of existing semi-autonomous science–policy bodies in the multilateral space would complement the existing institutional landscape with minimal disruption. By forging strong connections with the increasing network of regional and national One Health platforms (table 2), such an IPOH could facilitate the integration of local and national knowledge and the inclusion of Indigenous and traditional knowledge, which would potentially trigger favourable reception from civil society.

However, the existing science–policy institutions at national and international levels are already equipped with political legitimacy, organisational procedures, routines, established networks, and funding mechanisms. Existing structures produce abundant scientific knowledge and expert advice, adhering to high evidence-based policy making standards.³⁵ If it did not consider

such a landscape, an IPOH would risk adding marginal value, duplicating efforts, and increasing coordination costs.

Conclusions and future directions

Moving forward, we propose to carefully weigh the aforementioned values and risks of an IPOH and foster further discussions among key stakeholders. We identify two directions for future consideration to make progress on whether to establish an IPOH to strengthen pandemic PPR.

First, we recommend engaging relevant stakeholders and initiatives (tables 1, 2) in a gap analysis to understand the potential contribution to, and overlap and complementarity of an IPOH with, existing structures (eg, OHHLEP) and strategic plans (eg, the Quatripartite's One Health Joint Plan of Action¹¹ and WHO health emergency preparedness, response, and resilience framework proposal⁵). Methodologically, we recommend learning from the assessment done for setting up scientific panels,³⁶ as well as gap analyses for the creation of science–policy interfaces. Learning from such assessments and gap analyses would help to further understand opportunity costs and trade-offs. Bearing additional resource, the OHHLEP could undertake this work because a stakeholder mapping of existing One Health initiatives is already proposed as part of its theory of change.¹² Making progress on these fronts would answer whether an IPOH provides more added value over increased coordination costs.

Second, in terms of institutional design, we recommend considering the scope and objective of an IPOH and its degree of prescriptiveness and inclusiveness. Thematically, an IPOH could make contributions beyond pandemic PPR and contribute to addressing other global challenges, such as food and water safety and environmental degradation in the context of One Health.³⁷ Harnessing the potential flexibility of an IPOH would call for mechanisms of collaboration with other science–policy instruments on specific issues. Procedurally, the most effective model of knowledge production and uptake should be identified, especially how an IPOH would interface and align with the WHO CA+ pandemic instrument, and the most adequate methods an IPOH could apply to deliver its products. New approaches to evidence synthesis and system mapping that address the systemic nature of health determinants and interventions could provide guidance.³⁸

The momentum for applying One Health in multilateral policy making to improve pandemic PPR and beyond is now. As international mechanisms increasingly acknowledge the One Health approach, the most effective and appropriate way forward to strengthen the science–policy interface needs to be chosen, be it by designing new institutions (eg, an IPOH) or broadening the scope of existing institutions.

Contributors

AH, MHTS, TD, WvB, FG, and EvK conceptualised and designed the study. FG and EvK led the organisation and strategic programming of the expert workshop during the Geneva Health Forum 2022, with substantial inputs from AH, MHTS, TD, WvB, and OT. AH, MB, GLB, EP, and BR provided interventions during the expert workshop (either as moderator (GLB), presenter (AH and MB), or panel member (MB, EP, and BR), which have all informed the content of the manuscript. MB, SB, GLB, LC, LPS, EP, BR, and ZW were invited participants to the workshop and participated in the workshop discussions, which have informed the content of the manuscript. AH and MHTS were involved in data collection (review of the literature) and analyses, with contributions from FG and EvK. AH and MHTS drafted the first manuscript, with inputs from TD, WvB, WM, FG, and EvK. All authors commented on the manuscript, and read and approved the final version of the manuscript. All authors had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Declaration of interests

We declare no competing interests.

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