



One Health Management in Global Health Governance: Conceptual, Strategic, and Operational Perspectives

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Abstract. In the context of global interdependence, the One Health approach transcends the traditional boundaries of public health administration and clinical medicine, positioning One Health management at the intersection of science, public policy, and governance. Diseases are not isolated phenomena, generated exclusively by pathogens and individual biological vulnerabilities, but rather complex processes emerging at the interface between ecosystems, animal populations, and human communities, shaped by economic, political, and social dynamics. Therefore, a systemic understanding of health needs a systemic, collaborative management approach capable of integrating perspectives and expertise from diverse fields: human medicine, epidemiology, veterinary medicine, ecology, economics, sociology, and public policy.

The following interconnected aspects of One Health management are presented: the conceptual perspective, the strategic perspective, and the operational perspective. These illustrate that One Health management stands for an integrative framework that articulates values, principles, governance structures, and operational mechanisms, with a view to the sustainable management of global health, the minimization of health risks, and the strengthening of global resilience in the face of health emergencies.

One Health management cannot be reduced to a mere administrative tool for coordinating several separate and unconnected sectors of activity that conduct individual, fragmented, and linear analyses. On the contrary, it requires complex inter-institutional approaches – often interdisciplinary in nature – based on collaboration, cooperation, partnerships, and systems thinking.

Keywords: One Health, One Health Management, Global Health Governance.

1 From global interconnections to the One Health approach

Today's world is defined by global interconnectedness and interdependence, making it impossible for any community, region, or country to operate in isolation. Economic, political, social, and environmental issues are now interconnected and cannot be separately analyzed. Policies, approaches, and decisions made at regional, national, or local levels can have wide-ranging effects – economic, social, medical, political, and

more – that can affect other regions or the entire world, often with immediate or delayed consequences.

Global interconnectedness is a complex network of economic, political, social, cultural, technological, and public health relationships, characterized by multiple interdependencies among societies, cultures, economies, governance, and health systems. Managing this interconnectedness demands coordinated global strategies based on shared responsibility, transnational cooperation, and effective international governance. These strategies should maximize the benefits of globalization while minimizing and eliminating systemic risks. Fragmented approaches are increasingly inadequate for tackling complex issues such as climate change, social and economic shifts, cultural transformations, and digital developments. International organizations high-light the importance of integrated policies and international cooperation to achieve the Sustainable Development Goals (United Nations (UN), 2023b) and to manage global systemic risks (United Nations (UN), 2023a; World Economic Forum, 2024).

Health, as a global public good, involves complex governance structures and management strategies that incorporate multiple institutional actors – such as states, international organizations, private sector entities, the scientific community, and civil society – to enable the international community to address health challenges more effectively. These models can overcome the limitations of narrow, sectoral, or purely national approaches by facilitating quick information and data exchange, early threat assessment, and capacity building at all levels (local, national, regional, and global). They also promote the alignment of public health strategies, standards, and protocols, as well as data interoperability and policy coordination to strengthen health system resilience. Additionally, they foster institutional cooperation between states and inter-national organizations, support actions based on joint plans, enable rapid resource mobilization and efficient management, and ensure swift logistical responses during crises. Prompt and consistent public communication is also essential to reduce the spread and impact of health threats.

Given the significance of advancing systems thinking and interdisciplinary methods: **a) The notion of One Health has become a vital, unifying, and evolving concept.** It is increasingly incorporated into policies, strategies, programs, and scientific efforts across global medical, environmental, social, and educational sectors. This idea emphasizes a integrated approach to health and highlights the connections between health, environmental quality, climate, agriculture, and biodiversity, as well as the relationships among climate change, biodiversity crises, and emerging zoonotic diseases.

The official definition formulated by the World Health Organization, Food and Agriculture Organization, World Organization for Animal Health, and United Nations Environment Programme (2021) highlights that One Health represents 'an integrated and unifying approach that aims at the sustainable optimization of the health of people, animals, and ecosystems' and emphasizes the necessity of interdisciplinary and inter-institutional collaboration for managing complex global risks.

b) An integrative framework is essential – a modern paradigm known as the One Health paradigm. It promotes a comprehensive and interconnected view of health, offering a suitable conceptual, operational, and methodological framework for managing health as a shared global resource because:

- it recognizes and values the interconnections of health, highlighting the dependence between human health, animal health, and environmental quality;
- it directly addresses the challenges created by planetary interconnectedness and provides a foundation for creating sustainable prevention, surveillance, and intervention strategies worldwide;
- it fosters collaboration across disciplines and sectors at local, national, regional, and global levels to achieve the best health outcomes.

The One Health paradigm promotes a unified view of health that emphasizes the interconnectedness of human, animal, and environmental health. Its goal is to manage global risks effectively and enhance the resilience of socio-ecological systems (Food and Agriculture Organization (FAO) et al., 2021; World Organization for Animal Health (WOAH), 2022). Therefore, One Health is not just a theoretical idea or a new conceptual framework for health, but functions as an operational paradigm. It serves as a practical strategic approach to collective action, in which institutions, governments, and international organizations collaborate to design and implement health management strategies worldwide, aiming to safeguard global health and secure a sustainable future for generations to come.

2 One Health Management – conceptual perspective

In the context of planetary interdependence, managing the One Health approach involves processes, structures, mechanisms, and tools that turn its values and principles into policies, strategies, and actions. This is achieved through collaborative, coordinated, intersectoral, and transdisciplinary efforts across all levels – institutional, local, national, regional, and international or global (Food and Agriculture Organization (FAO) et al., 2022).

This definition goes beyond traditional health administration and clinical medicine, placing One Health management at the crossroads of science, public policy, and governance. It is based on the understanding that diseases are not isolated events caused only by pathogens and biological susceptibilities, but complex processes that arise at the intersection of ecosystems, animals, and humans, influenced by economic, political, and social factors (Destoumieux-Garzón et al., 2018). Consequently, a systemic view of health requires integrated, collaborative management that brings together expertise from fields such as human medicine, epidemiology, veterinary medicine, ecology, economics, sociology, and public policy (Food and Agriculture Organization (FAO) et al., 2021; United Nations Environment Programme (UNEP), 2021).

The conceptual perspective of One Health management offers an interpretative framework and an epistemological foundation for management. It aligns with the theoretical principles of the One Health approach and mainly includes:

- viewing health as a systemic phenomenon resulting from interactions among humans, animals, and the environment;
- applying systems thinking and interdisciplinary methods;
- integrating diverse fields such as human medicine, veterinary medicine, environmental science, ecology, education, and sociology.

The need for an integrated health management framework has become especially clear amid recent major health crises – including SARS (2002-2003), H1N1 flu (2009-2010), Ebola (2014-2016), Zika (2015-2016), and MERS-CoV (2012-present) – and has grown more urgent after the COVID-19 pandemic. These events have shown that health systems focused solely on treatment and reactive emergency responses are inadequate to tackle the increasingly complex and evolving epidemiological challenges driven by zoonoses, climate change, and biodiversity loss. Instead, health systems must adopt comprehensive, proactive approaches that recognize the interconnectedness of human, animal, and environmental health. This requires inter-disciplinary collaboration among experts in medicine, veterinary science, ecology, and public health to effectively address these interconnected challenges (One Health High-Level Expert Panel (OHHLEP) et al., 2022).

Conceptually, managing the One Health approach extends beyond simply coordinating multiple separate sectors that operate in isolation and perform individual, linear analyses. Instead, it requires complex, often interdisciplinary, approaches, fostering inter-institutional collaboration and systemic thinking (Food and Agriculture Organization (FAO) et al., 2022; World Health Organization (WHO), 2023). This systemic view has direct managerial implications: targeting interventions at just one sector, disease aspect, or pathogen is reductionist and inadequate given the current complexity of global health threats (United Nations Environment Programme (UNEP), 2021). Therefore, effective One Health management relies on the ability of structures, institutions, and individuals to operate concurrently at multiple levels, from different angles, and across interconnected fields through mechanisms of coordination, collaboration, and shared knowledge production.

From a conceptual standpoint, One Health management is viewed as a complex, multidimensional framework that comprehensively considers health in a systemic and integrative manner. It combines various levels of reflection, analysis, intervention, and anticipation of emerging health risks (Food and Agriculture Organization (FAO) et al., 2022). The primary interconnected dimensions of One Health management are:

2.1 The systemic and integrative dimension

The systemic and integrative dimension of One Health management highlights the need for comprehensive management that recognizes the complex links between human, animal, and environmental health (Food and Agriculture Organization (FAO) et al., 2022). This perspective marks a shift in how we view health, moving away from seeing it as isolated within individuals or sectors. Instead, health is now understood as the result of interactions among humans, animals, ecosystems, and various biological, ecological, and social systems. Therefore:

- health is an emergent, multi-faceted phenomenon, not an isolated event;
- diseases are dynamic processes shaped by several factors such as climate change, population mobility, land use changes, and biodiversity loss (United Nations Environment Programme (UNEP), & International Livestock Research Institute (ILRI), 2020);

- effective One Health management requires systemic thinking and integrated approaches to understand complex causal relationships, both direct and indirect effects, and feedback loops within the socio-ecological system involving human, animal, and environmental health.

In this context, the systemic and integrative aspect requires moving beyond fragmented methods and developing coordinated interventions that address multiple health determinants simultaneously. As such, the success of One Health management relies on the ability of institutions and stakeholders to integrate information, approaches, strategies, and policies across fields into a unified, flexible framework.

2.2 The interdisciplinary and transdisciplinary dimension

The importance of the interdisciplinary and transdisciplinary dimension lies in their capacity to address the complexity of global health challenges, which cannot be understood or resolved through a single discipline (Food and Agriculture Organization (FAO) et al., 2022). This dimension underscores the need to combine knowledge, as well as languages, concepts, models, methods, and techniques from various fields such as human medicine, veterinary medicine, epidemiology, environmental sciences, ecology, economics, educational sciences, sociology, and political sciences.

Interdisciplinarity involves close collaboration among scientific disciplines, creating strong links and interconnections to develop a systemic, unified view of health issues. This results in a comprehensive, integrated picture that goes beyond the scope of individual disciplines.

Transdisciplinarity goes further by crossing disciplinary boundaries, integrating knowledge at a higher level, and engaging actors from scientific, public, private, and community sectors. This approach encourages co-creation of solutions and the incorporation of multiple perspectives to address the complex realities of planetary health phenomena (United Nations Environment Programme (UNEP), & International Livestock Research Institute (ILRI), 2020).

Within this framework, the interdisciplinary and transdisciplinary dimensions of One Health management support the development of creative, innovative solutions adapted to the complexities of health challenges, helping to prevent fragmented or inefficient interventions and boosting the resilience of socio-ecological systems.

2.3 The institutional and coordination dimension

The institutional and coordination dimension encompasses the requirements necessary for the successful implementation of the One Health approach. It emphasizes collaboration and cooperation across different sectors and governance levels (Food and Agriculture Organization (FAO) et al., 2022). This dimension includes:

- institutional structures that support intersectoral and multilevel coordination at local, national, regional, and global levels;
- the development of adaptable institutional networks that facilitate information sharing, joint decision-making, and coordinated action;

- engagement of multiple actors who can work together effectively to address health issues;
- functional mechanisms to promote cooperation and information exchange among structures, institutions, and sectors (World Health Organization (WHO), 2023).

An absence of effective coordination risks causing fragmented efforts, overlap, duplication, or conflicts between sectoral or national policies, ultimately impairing the efficiency of interventions and the capacity to respond to new health threats.

2.4 Epistemic dimension

The epistemic dimension concerns how knowledge is produced, validated, integrated, and utilized in decision-making. Within the One Health approach, this dimension supports the scientific basis of decisions and involves (Food and Agriculture Organization (FAO) et al., 2022):

- the presence of epistemic diversity, given that many disciplines and fields of knowledge are involved and that different but complementary scientific paradigms are integrated;
- overcoming the fragmentation of knowledge and disciplinary 'silos', which limit the capacity to understand complex health phenomena and solve complex health problems;
- the integration of different analytical and interpretative perspectives, aiming for a systemic and comprehensive understanding of health determinants;
- the presence of mechanisms for co-production of knowledge, where experts from different fields collaborate to generate and integrate relevant analytical and interpretative perspectives for a comprehensive and objective understanding of health phenomena, processes, and issues, and to underpin effective policies, practices, and interventions.

2.5 The ethical and sustainability dimension

This dimension extends managerial actions beyond short-term efficiency and performance metrics to consider their long-term effects on human, animal, and environmental health (Food and Agriculture Organization (FAO) et al., 2022). It sets up a normative, value-based framework that guides decisions and interventions aligned with sustainable development and global responsibility principles:

- equity in health, achieved by reducing disparities in resource and healthcare access among human populations and between humans and the environment, shifting from an anthropocentric focus to a planetary health view that values all life forms and ecosystems (Whitmee et al., 2020; World Health Organization (WHO), 2023);
- intergenerational responsibility, which emphasizes considering the long-term impacts of current decisions on future generations, balancing present needs with conserving the environment's capacity for regeneration to prevent resource depletion and irreversible ecosystem damage;

- respect for ecosystem integrity, recognizing the intrinsic value of natural environments and the importance of protecting them as foundations of global health. Healthy ecosystems help prevent disease emergence, regulate biological processes, and support ecological balance.

The ethical and sustainability dimension redefines performance criteria for One Health management, shifting focus from immediate outcomes or economic metrics to enhancing resilience of social-ecological systems, promoting health equity, and safeguarding natural resources for the future. Consequently, One Health becomes not only a risk-management tool but also a pathway to responsible, equitable, and sustainable global development.

2.6 The socio-economic and political dimension

The socio-economic and political dimension emphasizes that health issues tackled through One Health must be understood and managed within their structural context, where they originate, manifest, and change. Socio-economic and political factors heavily influence health and disease patterns, highlighting the importance of economic structures, public policies – such as economic, agricultural, technological, and digital ones – and global dynamics in shaping health risks and their distribution, as well as the broader determinants of health and disease (Intergovernmental Panel on Climate Change (IPCC), 2023; World Health Organization (WHO), 2023).

In this perspective, health results from complex processes affected by political and economic choices, development strategies, and societal organization. Therefore, One Health approaches should extend beyond sector-specific actions to analyze these structural determinants, aiming to address the root causes of health issues rather than just their symptoms (United Nations Environment Programme (UNEP), & International Livestock Research Institute (ILRI), 2020).

Key structural factors that influence the emergence and spread of diseases include:

- globalization, which speeds the movement of people, goods, and pathogens, increasing disease transmission risks worldwide;
- trade escalation, especially in animals and animal products, facilitating zoonoses transmission;
- rapid urbanization, linked to higher population density, infrastructure pressure, and ecosystem changes;
- population mobility through migration and tourism, aiding pathogen spread;
- social and economic inequalities affecting healthcare access, living conditions, and vulnerability;
- agricultural policies that influence land use, production practices, and human-animal-environment interactions, potentially fostering disease emergence and spread.

The concept of Structural One Health (Wallace et al., 2015) underscores that managing health requires considering politico-economic and structural determinants of disease emergence, as traditional models often overlook these fundamental causes.

Moreover, this approach emphasizes that policies in seemingly unrelated sectors such as agriculture, the environment, trade, or technology have direct effects on health

and ecosystem stability. Therefore, One Health must incorporate a 'Health in All Policies' strategy to foster policy coherence and integration.

In summary, this socio-economic and political perspective advocates for a systemic, critical approach that links health to economic structures, processes, and global trends, enabling interventions that address not only health effects but also the underlying causes of health risks.

2.7 The governance dimension

The governance dimension involves the processes by which decisions are made and actions are coordinated across various levels, ensuring coherence, convergence, and efficiency in One Health initiatives. Operating within a multi-level governance framework, One Health management sees local, regional, national, and international actors working together to tackle complex, globally-oriented challenges (Food and Agriculture Organization (FAO) et al., 2022; World Health Organization (WHO), 2023). This dimension includes:

- recognizing the importance of strong political will and proper resource allocation for effective global implementation of One Health strategies;
- developing institutional frameworks that support collaborative, evidence-based decision-making across sectors, enabling joint action;
- establishing effective mechanisms for interdisciplinary and intersectoral collaboration, international cooperation, and coordination, along with communication and capacity building—grounded in transparency, shared responsibility, trust, and mutual respect among stakeholders;
- securing sustainable and sufficient funding;
- fostering an organizational culture that values collaboration and cooperation at all governance levels—local, regional, national, and international.

In this context, One Health governance extends beyond mere formal administrative coordination among institutions. It involves engaging and coordinating public, private, and civil society actors, articulating diverse interests, easing dialogue across sectors and decision levels, and creating flexible, adaptive structures capable of managing complex risks to human, animal, and environmental health (Food and Agriculture Organization (FAO) et al., 2022).

The governance aspect of the One Health approach entails a complex system of multi-level coordination and decision-making, in which institutional processes, intersectoral collaboration, and international cooperation are vital to ensuring effective interventions. It emphasizes that addressing global health risks requires not only fragmented efforts but also flexible, integrated, and adaptive governance capable of mobilizing diverse actors and resources across sectors. Consequently, this dimension is crucial for a coherent and effective response to the intricate risks affecting human, animal, and environmental health.

Overall, from a conceptual standpoint, One Health management is a complex, multidimensional, systemic, and adaptive framework for health governance. Its dimensions – such as systemic and integrative; interdisciplinary and transdisciplinary; institutional and coordinating; epistemic; ethical and sustainability; socio-economic and political;

and governance – are interconnected and support systemic approaches based on axiological principles. These are collaborative efforts aimed at sustaining planetary health and enhancing responsiveness to global risks. The interdependence among these dimensions underscores the deeply interconnected nature of planetary health and highlights the need for coherent, integrative management that can operate across multiple levels in a dynamic, uncertain global environment.

3 One Health Management – strategic perspective

The strategic perspective of One Health management is centered on how the foundational concepts and principles of this approach are translated into medium- and long-term strategic actions, capable of effectively addressing the complex challenges of global health and planetary health (Food and Agriculture Organization (FAO) et al., 2022; World Health Organization (WHO), 2023). In this framework, the strategic management of One Health chiefly involves articulating clear objectives, prioritizing interventions, and coordinating resources efficiently to prevent, control, and mitigate emerging health risks (Intergovernmental Panel on Climate Change (IPCC), 2023; United Nations Environment Programme (UNEP), & International Livestock Research Institute (ILRI), 2020).

From a strategic perspective, One Health management primarily involves the following fundamental directions:

3.1 Proactive orientation: predicting and preventing risks

A key part of the strategic approach is to adopt a proactive mindset, aiming to predict and prevent risks instead of responding reactively during crises (World Health Organization (WHO), 2023). This involves creating integrated systems for monitoring, surveillance, and early warning that encompass epidemiological and ecological aspects, enabling early detection of threats from zoonotic diseases, antimicrobial resistance, or ecological disruptions. Consequently, the focus moves from reactive interventions to strategic planning driven by scientific data, risk assessments, and evidence, aligning with the principles of the integrated One Health approach (Food and Agriculture Organization (FAO) et al., 2022). Incorporating feedback from practical implementation and performance evaluations of these systems enhances the resilience of the health and environmental sectors and improves stakeholders' capacity to prevent and address the complex risks facing us today.

3.2 Intersectoral integration of public policies

A key strategic focus is the intersectoral integration of public policies, which involves aligning and harmonizing strategies across sectors such as human health, animal health, the environment, agriculture, education, and social issues (Food and Agriculture Organization (FAO) et al., 2022). This strategy aims to create coherent policies that address the interconnected nature of health risks. International initiatives led by WHO,

FAO, and WOA support the development of unified frameworks for managing health risks globally (World Health Organization (WHO), 2023).

3.3 Establishing public health priorities

The strategic approach focuses on setting public health priorities by analyzing emerging risks and their effects on populations and ecosystems (World Health Organization (WHO), 2023). It emphasizes areas like pandemic prevention, antimicrobial resistance, food security, and climate change adaptation (Food and Agriculture Organization (FAO) et al., 2022).

These priorities highlight the interconnectedness of human, animal, and environmental health, emphasizing the importance of integrated interventions that address multiple vulnerabilities simultaneously.

3.4 Development of institutional capacity and system resilience

A vital component of the One Health strategy involves enhanced institutional capacity and the fortification of health system resilience within ecosystems (World Health Organization (WHO), 2023). This encompasses the development of public health infrastructure, the modernization of diagnostic and surveillance laboratories, and the augmentation of capabilities for rapid response to health threats. Such initiatives render systems more adaptable, flexible, and resilient, thereby enhancing their capacity to effectively manage complex, interconnected, and continually evolving risks.

3.5 International collaboration and cooperation

Promoting international collaboration, data sharing, and exchange of approaches, strategies, and best practices among states and global organizations is a key element of global health security, serving as a strategic pillar of One Health management (World Health Organization (WHO), 2023). In a connected world, health security cannot be supported within individual countries alone; it depends on international data exchange, cross-border coordination, and shared responsibilities among nations and international bodies. These mechanisms are crucial for effectively preventing and managing global health threats.

In conclusion, the strategic perspective of One Health management strategy is a critical level of health governance focused on prevention, integration, coordination, and international cooperation. It translates the core principles of the One Health approach into clear strategic actions to safeguard the health of populations, animals, and ecosystems over the long term.

4 One Health Management – an operational perspective

From an operational standpoint, One Health management revolves around four interconnected pillars, summarized by the acronym 4C: communication, collaboration, coordination, and capacity building. These pillars reflect how sectors, disciplines, and society are connected in implementing the One Health approach, providing an essential framework for turning strategic principles into actionable steps. They function not as separate entities but as complementary parts of an integrated management system—interdependent elements that influence each other and form relationships of mutual reliance, all within the operational structure promoted by international organizations (Food and Agriculture Organization (FAO) et al., 2022; World Health Organization (WHO), 2023).

4.1 Communication

Communication is the foundation of the One Health system, ensuring the continuous flow of information among actors – institutional, scientific, and social – across sectors (human health, animal health, environment) and across governance levels (local, national, regional, and global) (Food and Agriculture Organization (FAO) et al., 2022). Effective communication enables the rapid exchange of epidemiological data, the prompt issuance of early alerts, the swift dissemination of relevant scientific information, and the maintenance of institutional transparency, thereby supporting informed decision-making and reducing response times in risk situations.

4.2 Collaboration

Collaboration entails coordinated, integrated efforts across disciplines and sectors, involving institutional, scientific, and social actors united by shared goals. Within the scope of One Health management, this requires integrating expertise from diverse fields, including human medicine, veterinary medicine, ecology, epidemiology, and the social sciences. It also involves forming functional interdisciplinary teams, developing inter-institutional partnerships, implementing joint projects, and co-producing solutions and comprehensive interventions tailored to address the complex nature of global health challenges (Food and Agriculture Organization (FAO) et al., 2022).

4.3 Coordination

Coordination focuses on maintaining consistent action and preventing fragmentation, overlap, or duplication of effort. It requires institutional and procedural mechanisms that facilitate policy harmonization, intervention synchronization, alignment of goals across sectors and governance levels, and the development of multi-tier governance structures. Strong coordination is vital to the cohesive, integrated operation of the One Health management system.

4.4 Capacity building

Capacity building involves enhancing human, institutional, and technical resources vital to the effective implementation of the One Health approach. This encompasses professional training activities, the development of interdisciplinary skills, the modernization of public health infrastructure, and the fortification of surveillance and response systems. Through these initiatives, involved stakeholders become better equipped to address and manage complex and emerging risks (Food and Agriculture Organization (FAO) et al., 2022).

In summary, the operational perspective of One Health management underscores the translation of strategic principles into tangible functional mechanisms, rooted in communication, collaboration, cooperation, coordination, and capacity building. Collectively, these four pillars guarantee the effective implementation of the One Health approach and augment the efficiency of interventions amidst complex global health threats.

The four pillars function interdependently, constituting an integrated system where-in communication among the various actors involved in One Health management facilitates their collaboration and cooperation in joint initiatives and the coordination of interventions. Strengthening capacities is essential to the optimal functioning of the One Health management system, as it involves developing the requisite human, institutional, and technical resources for intervention implementation.

The 4C model embodies the fundamental operational framework of the One Health approach, ensuring the translation of strategic principles into tangible, coherent, and effective interventions and actions on the global stage.

5 Conclusions

One Health management is not reducible to a mere administrative instrument for coordinating multiple, separate, and disconnected sectors of activity that conduct individual, linear analyses. Conversely, it entails complex inter-institutional, often inter-disciplinary approaches founded on collaboration, cooperation, partnerships, and systemic thinking. In this context, One Health management constitutes an integrative framework that articulates values, principles, governance structures, and operational mechanisms, all aimed at the sustainable management of planetary health, minimizing health risks, and enhancing global resilience against health emergencies.

Presently, One Health transcends being merely an idea or a conceptual paradigm; it is acquiring instrumental importance as a strategic global tool for health governance. This progression underscores the necessity of an integrated approach in an interconnected world, where human health is inextricably linked to animal health and ecosystem integrity.

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