

EDITORIAL

The ecological thinking behind One Health

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FROM INTERDISCIPLINARY COLLABORATION TO A PARADIGM SHIFT

One Health (OH) is a living paradigm. Its evolution reflects both the expansion of scientific knowledge and an increasing awareness of the profound interconnections among human, animal, and environmental health. The COVID-19 pandemic brought OH to the forefront of international health strategies and policies, but its growing prominence has also revealed the need for greater conceptual clarity.

Over time, institutions and organizations have interpreted OH in different ways, resulting in a variety of definitions and applications. One of the most cited definitions was proposed by the World Health Organization (WHO), describing OH as an approach in which multiple sectors work together to achieve better public health outcomes [1]. In this formulation, interdisciplinary collaboration occupies center stage, yet human health remains the ultimate reference point. Animals and the environment are assigned a largely instrumental role and are valued chiefly for their implications for human health.

To foster a common understanding and operational framework, the Food and Agriculture Organization (FAO), the World Organization for Animal Health (WOAH), the United Nations Environment Programme (UNEP), and the WHO, with the support of the interdisciplinary One Health High-Level Expert Panel (OHHLEP), adopted a new shared definition: “One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems” [2] (*Box 1*). This shift is more than semantic. It reframes OH from a model of cross-sectoral collaboration into a paradigm defined by its overarching objective: the sustainable balancing and optimization of health across the interconnected domains of humans, animals, and ecosystems.

FROM ANTHROPOCENTRISM TO ECOLOGICAL THINKING

The most significant innovation of the new definition is its implicit move beyond a purely anthropocentric

perspective [3]. By placing human, animal, and ecosystem health on the same conceptual plane, it acknowledges that human health does not exist in isolation but emerges from the dynamic relationships that link living organisms and the physical environment into a single, interconnected system. In this sense, OH invites the development of a genuinely ecological way of thinking, namely a systemic understanding of health as an emergent property of the complex interactions and functional relationships among biological, environmental, and social processes that sustain life on Earth.

Far from diminishing the importance of human health, this perspective highlights that the well-being, health, and very existence of human societies as we know them can only be sustained within an “integrated” and “unifying” conception of health that recognizes the constitutive relationships linking the three domains of OH. The new definition also reflects a growing awareness of the influence that human activities exert on ecosystems and, consequently, on global health. Yet, despite this awareness, the environmental dimension of OH remains neglected, both conceptually and operationally.

BEYOND ZOOSES: ADDRESSING GLOBAL CHALLENGES

The reasons underlying the relevance of OH have also changed over time. For decades, the approach was largely associated with medical-veterinary collaboration aimed at the prevention and control of zoonotic diseases. Today, its scope has expanded to encompass some of the most pressing challenges of the twenty-first century, including threats to health and ecosystems, the collective need for safe and adequate food, water, energy, and clean air, climate change and sustainable development [2]. It concerns the capacity to maintain ecological and social conditions compatible with the long-term well-being of both human societies and the ecosystems on which they depend. This perspective also highlights that environmental and health crises are often different expressions of deeply interconnected processes. Climate change, for example, represents

not only a paradigmatic anthropogenic environmental crisis but also a major determinant of human health. OH therefore offers both an interpretive perspective and an approach for addressing these challenges in an integrated manner.

This broader understanding of OH inevitably raises the question of how the environmental dimension should be conceptualized within the paradigm.

THE EMERGENCE OF THE ECOLOGICAL DIMENSION

The inclusion of the terms “sustainably” and “ecosystems” in the latest OH definition is particularly significant, as it reflects the growing recognition of the environmental dimension as a core pillar of the paradigm. The shift from the generic notion of “environment” to the more specific concept of “ecosystems” is especially important. Ecosystems are not merely the backdrop to human activities. They can be regarded as the functional units of the environment, comprising biotic and abiotic components, their interactions, and the ecological processes that sustain resilience and ecological balance. The integrity of ecosystems is therefore fundamental to maintaining the conditions that support life on Earth.

This evolution highlights one of the enduring weaknesses of OH: although increasingly recognized as a core pillar of the paradigm, the environmental dimension remains the most difficult to integrate fully, both conceptually and operationally.

For too long, the environment has been viewed either as a source of risks to human health or as a collection of physical elements – air, water, and soil – to be monitored and managed. Both perspectives are insufficient. If animals and environment are considered only in terms of the threats they pose to humans, OH remains trapped within a narrow anthropocentric framework. Likewise, if the environment is reduced to a passive setting, we lose the capacity to understand the relationships that sustain the health of all living systems.

BALANCING INTERESTS, GENERATING CO-BENEFITS

This evolution of OH carries an important implication. If animals and ecosystems can pose risks to human health, human activities can also threaten animals and ecosystems. This introduces a frequently overlooked dimension of OH: the dimension of conflict. The tensions between biodiversity conservation and economic development, natural resources exploitation and conservation, immediate human needs and long-term sustainability cannot be ignored.

OH does not remove these tensions; it provides a conceptual model for making them visible, balancing competing interests, and identifying mutually beneficial solutions.

The notion of “balancing,” embedded in the current definition, implicitly acknowledges the existence of competing priorities and interests. Within this context, the concept of health co-benefits becomes particularly relevant. Actions designed to improve one domain of

OH can generate simultaneous benefits in the others. European initiatives aimed at reducing pesticide use, improving animal welfare, restoring ecosystems, and combating biodiversity loss exemplify this logic. Such measures are intrinsically OH because they generate interconnected benefits for human, animal, and environmental health while strengthening the resilience of socio-ecological systems.

A SHARED RESPONSIBILITY

The magnitude of today’s OH challenges may suggest that change depends exclusively on governments and international organizations thus generating resignation and disengagement among individuals and local communities. In reality, the strength of OH lies in its capacity to mobilize actors at multiple levels of society. Even when addressing complex global challenges, OH must remain actionable and scalable. Its broad goals need to be translated and broken down, through appropriate OH governance mechanisms, into concrete, context-specific interventions that can be understood, adopted, and implemented across all levels of society.

Ultimately, the value of One Health lies not only in its capacity to connect disciplines, sectors, and institutions, but also in its ability to reshape the way health itself is understood. By recognizing the interrelationship of humans, animals, and ecosystems, OH invites a shift from a fragmented view of health toward a socio-ecological understanding of health, rooted in relationships, interdependence, and shared responsibility for the living world. In a world increasingly shaped by environmental change and global interconnections, embracing this perspective is no longer optional. It is a prerequisite for building healthier, more resilient, and more sustainable societies.

Conflict of interest statement

The Author declares that there are no conflicts of interest.

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Box 1. The One Health definition developed by the One Health High-Level Expert Panel (OHHLEP), the scientific advisory group of WHO, FAO, WOA, and UNEP, and subsequently adopted as a common reference framework for the One Health approach.

One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems.

It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent.

The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.

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