



Facilitating implementation of the one health approach: A definition of a one health intervention

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ABSTRACT

The last two decades has witnessed a disruption of socio-economic, security and political foundation worldwide due to surging of health events arising at the ecosystem, animal and human interface. The unprecedented magnitude of these events has led to the adoption of One Health approach. Several theoretical definitions and an operational one were released to help common user to understand the approach. To provide evidence of the impact of implementing the One Health approach and to assess the process outputs, a definition of a One Health intervention is required. We are proposing a definition and characteristics of a One Health intervention which will complement the operational definition of the One Health approach by the One Health High-Level Expert Panel.

1. Introduction

Currently, the world is faced with an emerging infectious disease called COVID-19. Before that, other emerging and re-emerging communicable diseases such as severe acute respiratory syndrome (SARS), Highly Pathogenic Avian Influenza (HPAI) H5N1, H1N1 Pandemic, Zika, Ebola, Marburg, Lassa fever, Rift Valley fever, Monkey pox, Rabies and others have been reported. Meanwhile, increasing rates of antimicrobial resistance and the misuse of pesticides and chemicals are negatively impacting human, animal (terrestrial, aquatic), and plant species. All this happened within this millennium [1–3]. Given the trends of animal, human and plant disease outbreaks, it begs the question of whether there will not be another pandemic in the near future. These pandemics will be remembered as major traumatic events that have caused social, economic, commodities supply, food system and political disruptions in nearly all the countries of the world.

2. Evolution of the One Health approach

The occurrence of the above public health events has necessitated setting up a new agenda built around the urgency to practice better collaboration, coordination, and cooperation among different

disciplines and sectors. In addition, it has brought up the need to increase efficiency in preparing for, preventing, detecting early, and responding adequately to contain these health events at source in order to minimize the devastating social and economic consequences that they cause [4,5,8]. The core of this new agenda is the promotion of what is termed as the One Health approach. The development of this agenda started on April 14, 2007, when the American Veterinary Medical Association's Board approved the establishment of a One Health Initiative Task Force to pave the way towards implementation of the One Health approach [6]. This was followed by the June 2007 resolution of the American Medical Association in support of the One Health initiative [7]. In 2010, the Food and Agriculture Organization of the United Nations (FAO), the World Organization of Animal Health (WOAH), and the World Health Organization (WHO) jointly issued a Tripartite concept note on the shared responsibilities for addressing health risks through multisectoral collaborations and therefore, formalizing their commitment for the One Health approach [8]. The approach was endorsed by the World Health Organization (WHO) general assembly in May 2021 by adopting resolution WHA74.7 [9]. The United Nations Environment Programme (UNEP) general assembly adopted resolution UNEP/EA.5/Res.6 on One Health in March 2022 [10]. Meanwhile, in May 2022, FAO's 130th Programme Committee agreed to mainstream the One

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Health approach within the work of the organization [11]. A memorandum of Understanding between FAO, UNEP, WHO and WOA, establishing a formal partnership framework was signed on March 2022 promoting cooperation to combat health risks at the animal-human-ecosystem interface in the context of the One Health approach including antimicrobial resistance [12].

Towards establishing a clear, simple and universally agreed definition of One Health, a series of conceptual definitions (See Table 1) have

Table 1
One Health approach definitions.

Definition	Author and Year
One Health is the collaborative effort of multiple disciplines-working locally, nationally, and globally – to attain optimal health for people, animals, and our environment [13].	American Veterinary Medical Association. One Health Initiative Task Force Final Report. July 15,2008.
One Health is a holistic vision to address complex challenges that threaten human and animal health, food security, poverty and the environments where diseases flourish [14].	Food and Agriculture Organization of United Nation, Strategic Action plan, 2011.
One Health is the collaborative effort of multiple health science professions (veterinarians, physicians, public health officials, epidemiologists, ecologists, toxicologists and others+), along with their related disciplines and institutions – working locally, nationally, and globally – to attain optimal health for people, domestic farm and food animals, wildlife, plants and our environment [18].	United State Department of Agriculture, Factsheet 2016.
One Health is an integrated, unifying approach to balance and optimize the health of people, animals and the environment [16 a].	World Health Organization, last accessed November 22,022 World Health Organization Europe, last accessed November 2,2022
One Health is an approach to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes [16 b].	
One Health is a collaborative effort of multiple health science professions, together with their related discipline and institutions-working locally, nationally and globally-to attain optimal health for people, domestic animals, wildlife, plants and our environment [15].	One Health Commissions, previous definition, last accessed November 2, 2022.
One Health is a collaborative, multisectoral, and trans-disciplinary approach - working at local, regional, national, and global levels – with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment [17].	US Centers for Disease Control and Prevention, last accessed November 2, 2022.
An integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems. It recognizes that 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 on climate change and contributing to sustainable development.”	One Health High Level Expert Panel, last accessed November 2022.

been released by concerned organizations including, the American Veterinary Medical Association [13], the Food and Agriculture Organization of United Nation [14], the One Health Commission [15], the World Health Organization (WHO) [16], the US Centers for Disease Control and Prevention [17] and the US Department of Agriculture [18]. This number of definitions shows how each sector, organization, and discipline understand the definition of the One Health approach through its own lens. This reflects the historical training and culture which focuses on specializations within different disciplines. This shapes how disciplines and sectors behave in striving to identify, frame and solve complex health challenges that requires competencies such as teamwork, interpersonal system thinking, critical thinking skills and discipline specific knowledge to manage [19]. Recently, the One Health High Level Expert Panel (OHHLEP) released an operational definition of the One Health approach that seems to encompass more disciplines and sectors [20]. Despite existence of different definitions for the One Health approach, it is still unclear on what a One Health activity or intervention entails.

3. Progress towards implementation of the One Health Approach

The expectation of implementing the One Health approach is that it will contribute to addressing complex health challenges, unpredictable and predictable health events of known and unknown causes occurring at the animal-human-environment interface. Implementing the One Health approach therefore takes a key role towards enhancing intervention efficiency to achieve the Sustainable Development Goals (SDGs) by creating a forum for dialogue among the different sectors, civil society and community responsible for the management of the health issues at hand. This allows for the identification and addressing the root cause of the health event instead of addressing only its symptoms and consequences. For instance, malnutrition can only get fully addressed by different sectors of the health, agriculture, social sciences, political, and environmental sectors collaborating to allow not only the identification and management of malnourished and stunted subjects, but addressing food production, supply, storage, preparation, and safety. The environment sector would inform the farmers on changing rain patterns, adapting new approaches in management of rain, and recommending resilience approaches to managing of crops and the environment.

Since 2006, an increasing number of countries, national, regional, and international organizations have initiated implementation of the One Health approach or are progressing towards implementing it. So far, 21 countries in Africa have institutionalized the approach by establishing One Health platforms or multisectoral coordination mechanisms (see Fig. 1) using different frameworks such as Memorandum of Understanding, Ministerial, Prime Minister, or Presidential Executive Orders, several countries have adopted One health Strategic plans and Rwanda adopted a One Health policy [21,22,23,24,25]. Despite this progress, there are still institutional, organizational, governance, technical, and operational challenges that need to be addressed in order to have an optimal implementation of the One Health approach.

The ongoing COVID-19 pandemic seems to have exerted additional pressure and boosted worldwide resolve to adopt the One Health approach. The recent launch of the 2022 to 2026 Quadripartite (FAO, UNEP, WHO and WOA) One Health Joint Plan of Action (OH JPA) [26], after several previous wake up calls [27,28] may have been triggered by the current pandemic. The OH JPA and the related theory of change are important milestones as it provides informed guidance for the implementation of the One Health approach.

4. The need for defining a One Health intervention

Despite all this progress in defining what a One Health approach is and its implementation, we need to provide evidence of the effectiveness and impact of implementing this approach at the community, national,

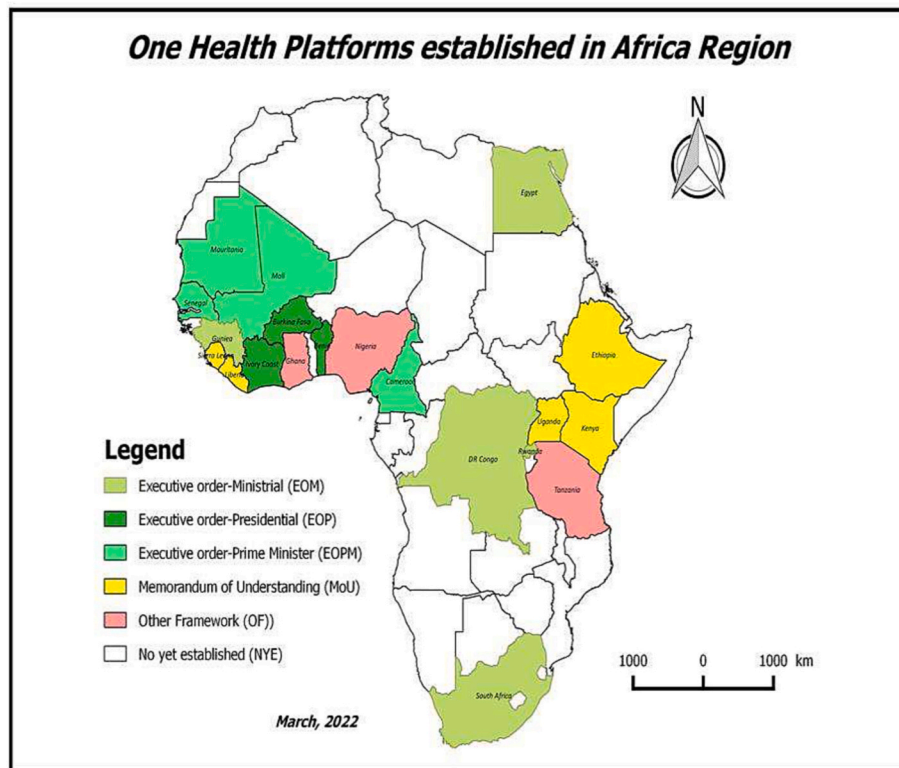


Fig. 1. One Health platforms established in Africa region.

regional, and global levels. This requires a clear operational definition of a One Health intervention, which will guide in measuring the process outputs and eventually the impact. This definition will complement the newly operational definition of the approach by the OHHLEP [20] and the One Health system-based approach definition by the Network for Evaluation of One Health [29].

4.1. One Health intervention

Previous work by Baum et al. [30] has looked at the metrics necessary to demonstrate how effective a One Health intervention can be measured. However, there is no definition of what a One Health intervention is. We propose to define a One Health Intervention as an activity jointly undertaken by at least two sectors (multi-sectoral), engaging multiple disciplines (multi-disciplinary), aimed at improving the efficacy and efficiency of different human, animal (terrestrial and aquatic), plant and environment health systems services.

4.2. Characteristics of One Health intervention

The main characteristics of a One Health intervention shall include, but not be limited to the following:

- i) The intervention should be a multisectoral and multidisciplinary initiative where there is mutual interest, benefit and resolve to address a health challenge.
- ii) There should be joint active participation and collaboration evidenced by equal partnership through joint investment plan, resources mobilization, joint programming, planning, rolling out, monitoring and evaluation and co-learning.
- iii) Shared resources including technical, personnel and financial.
- iv) Joint definition of measurable deliverables that will allow evaluation of the social, economic contributions and benefits of the project and programs activities across each sector and discipline.

5. Conclusion

The proposed definition is intended to contribute to strengthening the institutionalization and operationalization of the One Health approach and to streamline implementation of the OH JPA. This will trigger tangible progressive behavior change within and between sectors and disciplines. It is meant to remind sectors to move away from taking actions in silos and move towards joint actions that will optimize the beneficial impact of the One Health approach in preparing for, preventing, detecting, responding to health threats arising from disturbance of the human, animal (terrestrial, aquatic) and environment ecosystem while minimizing the social and economic consequences. This change will take place following an evolutionary process, the speed of which will be determined by the political, sectors and disciplines willingness and commitment to embrace the One Health approach when presented with evidence of the social and economic benefits arising from the enhanced efficacy and effectiveness of the systems interventions. This behavioral change, within and between sectors and disciplines, will require strong continuous advocacy and awareness creation at all levels from the community, sectors, disciplines, sub-national and national government. It is also expected that implementing the One health approach, following and building on the OH JPA and with a clear definition of One Health intervention will reinforce the sense of shared responsibility, accountability, and catalyze sincere engagements through joint understanding of complex health challenges and related risks that require effective multisectoral actions. The proposed definition is work in progress and is opened to modifications through informed experiences in implementing the One Health approach.

Author statement

None.

Declaration of Competing Interest

All the authors declared not competing interest.

Data availability

No data was used for the research described in the article.

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