Importance of a One Health approach in advancing global health security and the Sustainable Development Goals

J.R. Sinclair (1, 2)*

(1) One Health Office, National Center for Emerging Zoonotic and Infectious Diseases, Centers for Disease Control and Prevention (CDC), 1600 Clifton Road, NE 30329, Mail-Stop H-16-5, Atlanta, GA 30329, United States of America
(2) World Organisation for Animal Health (OIE), 12 rue de Prony, Paris 75017, France
E-mail: j.sinclair@oie.int; jsinclair@cdc.gov
*The conclusions, findings, and opinions expressed by the author do not necessarily reflect the official position of the United States Department of Health and Human Services, the Public Health Service, or the Centers for Disease Control and Prevention, or those of the World Organisation for Animal Health

Summary
The One Health approach supports global health security by improving coordination, collaboration and communication at the human–animal–environment interface to address shared health threats such as zoonotic diseases, antimicrobial resistance, food safety and others. Over the past decade, country after country has implemented the One Health approach and demonstrated recognised benefits. However, in order to build sustainability of One Health in these efforts, One Health champions and implementers need to collect and provide government decision-makers with country-level data on One Health’s impact to help justify policy decisions and resource allocations. Due to the broad, often seemingly all encompassing, nature of One Health in promoting synergies of multiple disciplines and sectors, the One Health community has faced difficulties in determining specific One Health impact indicators for formally evaluating One Health successes. In this paper, the author a) briefly reviews the ongoing commentary on the recognised benefits of the implementation of a One Health approach in the global health security context, b) discusses challenges in measuring the impact of One Health, and c) proposes possible solutions for evaluating the impact of One Health on global health security.

Keywords

Introduction
In February 2014, a consortium of countries launched the Global Health Security Agenda (GHSA) with a view to working towards ‘a world safe and secure from global health threats posed by infectious diseases’ (1). This vision complements the broader vision of the United Nations (UN) 2030 Agenda for Sustainable Development Goals (SDGs), which seeks ‘peace and prosperity for people and the planet, now and into the future’ (2). In considering One Health then ‘as a collaborative, multisectoral, and trans-disciplinary approach’ (Box 1), the positive impact on global health security, and by extension global peace and prosperity, is a straightforward and obvious conclusion. Critically though, as with any legislative, policy, or programmatic change or resource allocation decision, the One Health call for action must clearly provide concrete and measurable justifications to persuade governments and decision-makers to allocate the needed resources to all relevant sectors. While many successes have been documented in using a One Health approach to improve health for all, questions remain about what sort of information decision-makers need and how the impact, including cost savings, of this approach can be measured.
High-level examples that openly demonstrate the global community’s perspective on One Health include the 2018 memorandum of understanding signed by the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (OIE) and the World Health Organization (WHO), which lays out the terms and the rationale for a multisectoral, One Health approach (3). This MOU emphasises the need and basis for a multisectoral, One Health approach in assisting countries to not only comply with OIE standards (3) and the International Health Regulations (IHR) (2005) (4) but also achieve the SDGs. The FAO-OIE–WHO Tripartite, countries, non-governmental organisations, academia and others have developed, both independently and jointly, tools and processes for countries to use as needed in implementing the One Health approach (5, 6, 7, 8). But, even with this much-needed global support and the key tools and processes for implementation in place, countries lack the ability to measure the impact of One Health and document cost savings. The ongoing message from countries is that government decision-makers (i.e. those making financial and infrastructure decisions at the sub-national, national and regional levels) must be convinced and clear on the justifications for implementing policy changes in favour of One Health approaches. This clarity and transparency is critical in persuading governments to invest in One Health, because even though using a One Health approach can improve and maximise resource utilisation in the long run, implementation may, at least initially, require new investments, procedures or systems in coordinating and collaborating among cross-cutting programmes.

Even though the One Health community understands the critical need to measure the impact of One Health on health security at multiple government levels, the challenge is that activities such as additional assessments and evaluations may hinder a country’s ability to function day to day. An overabundance of assessments and evaluations is viewed as particularly detrimental in situations where resources, i.e. funding, personnel, infrastructure, or equipment, are already stretched thin. With this resource concern in mind, the search then becomes for ways to easily incorporate the One Health approach into ongoing assessment or evaluation activities. In terms of the One Health impact on global health security, this involves identifying available information or indicator proxies (e.g. human and animal morbidity rates from zoonotic diseases) that could serve to provide decision-makers with a more concrete concept of One Health’s added value and benefit. Establishing these information sources or proxies becomes a true exercise in multisectoral and multidisciplinary coordination, collaboration and communication across the human, animal and environmental health sectors. Depending on the specific One Health issue in question, other relevant partners may also need to be involved. A key aspect of this process is the shared responsibility across the relevant disciplines and sectors in implementing and sustaining the One Health approach, which also requires that each sector be equally well resourced.

In this paper, the author i) briefly reviews the ongoing commentary on the recognised benefits of the implementation of a One Health approach in the global health security context, ii) discusses challenges in measuring the impact of One Health, and iii) proposes possible solutions for evaluating the impact of One Health on global health security.

### Benefits and impact of One Health in the global health security context

The many arguments in support of the One Health approach serve as a declarative call for action. The ‘Manhattan Principles on One World, One Health’ demonstrate this call for action with the 2004 conference summary stating that the participants ‘urge the world’s leaders, civil society, the global health community and institutions of science’ to: institute 12 specific principles (9). The participants based these principles on the scientific evidence of ongoing zoonotic disease outbreaks. This scientific evidence has become, if anything, even more relevant in the past decade. One of the key data sources repeatedly referred to as justification for the One Health approach is the 2001 publication by Taylor et al., which states that over 60% of known human pathogens and 75% of emerging pathogens are zoonotic (10). As expressed at the 2018 Prince Mahidol Awards Conference on ‘Making the World Safe from the Threats of Emerging Infectious Diseases’, the One Health approach is critical in addressing the expected fallout from population growth, e.g. food shortages and expansion of emerging diseases and antimicrobial resistance (11), which are themes that link directly to the SDGs (12).

Multiple authors, organisations, and conferences have shared scientific findings that demonstrate the obvious
benefits of One Health (11, 13, 14, 15, 16, 17), even if obtaining impact data is still a work in progress (18). What is obvious from these scientific data is that there is an urgent need for disciplines and sectors to address collaboratively capacity building and sustainable coordination for zoonotic diseases and other shared health threats at the human–animal–environment interface.

One notable example of One Health collaboration is the FAO–OIE–WHO Tripartite, which has taken multiple steps to improve synergies at the human–animal–environment interface in building global health security (3, 19, 20). In the press release for the 2018 Tripartite MOU, the FAO Director-General, Dr José Graziano da Silva, stated: ‘... we cannot deal with human health, animal health, and ecosystem health in isolation – we have to look at them together, and address them together. This partnership pools the unique expertise of each organization and brings their combined weight to bear to do just that, via a One Health approach’ (21). The FAO Director-General’s comments speak to the core need for the One Health approach and highlight the benefit of joining forces to collaboratively address shared health threats at the human–animal–environment interface.

The FAO–OIE–WHO Tripartite organisations serve in promoting and demonstrating the benefits of the One Health approach in building global health security, not only in their joint efforts, but also in that each organisation is taking steps to ensure that its individual activities use a One Health approach and involve the other key sectors when appropriate. For example, the OIE’s Performance of Veterinary Services (PVS) missions, which are designed to help countries develop the capacities needed to meet OIE standards, have expanded to include a One Health approach (22). Also, a clear opportunity for involvement of all sectors at the human–animal–environment interface has come in the form of WHO’s Joint External Evaluations (JEEs), which assess a country’s ability to meet the requirements of the IHR. The JEE missions have a more recent history than the OIE’s PVS missions, but are similarly a voluntary national activity that can lead to increased synergy at the human–animal–environment interface. Kandel et al., in their 2017 article, ‘Joint external evaluation process: bringing multiple sectors together for global health security’, describe the JEEs’ fully collaborative and multisectoral approach across sectors and their emphasis on the importance of One Health (14). The article goes on to declare that, ‘the JEE country evaluation process is catalysing dialogue between sectors and helping shift the paradigm from an approach primarily oriented towards human health to a more holistic and integrated, multisectoral, One Health or whole-of-government approach’.

The FAO–OIE–WHO Tripartite has provided a clear description of the foundation for One Health in its document Taking a Multisectoral, One Health Approach an

FAO–OIE–WHO Tripartite Guide to Addressing Zoonotic Diseases in Countries (also known as the FAO–OIE–WHO Tripartite Zoonoses Guide) (23). In this new guide, the definition as per Box 2 is employed. This modernised definition comes as the result of consensus reached by a consortium of human, animal and environmental health professionals from national, regional and international agencies and institutions, academia, and non-governmental organisations around the world. With this consensus, the One Health community has a definition that can be used consistently to advocate for One Health’s sustainability at multiple government levels and help decision-makers understand what is meant by a One Health approach.

The Tripartite Zoonoses Guide provides One Health success stories from around the globe that describe how countries have addressed health threats at the human–animal–environment interface using the One Health approach (23). It includes these success stories to increase awareness of the benefits of a One Health approach while being a resource for other countries in developing and supporting their own One Health efforts. But the question remains as to how to translate this call for action and these success stories into demonstrable data understood by government decision-makers in their own sub-national, national or regional context. Without these data it can be difficult to obtain the resources needed to make the One Health approach sustainable. Countless efforts are ongoing at the sub-national, national, regional and international levels in all relevant sectors and disciplines to incorporate the One Health approach into tools and processes and to address health threats at the human–animal–environment interface in a resource-mindful manner. These efforts include, for example, institutionalising One Health coordination, linking surveillance systems, sharing laboratory resources, expanding epidemiology training to include all relevant disciplines and sectors, and conducting joint risk assessments. Even if One Health champions and implementers are uncertain about exactly what country-level data should be used to indicate One Health’s impact on health security, One Health has demonstrably recognisable and obvious benefits. The key, then, is using these recognised benefits to address the more difficult task of identifying the data to measure One Health impacts (18).

Box 2
One Health, as defined by the FAO–OIE–WHO Tripartite

‘One Health is an approach to address a health threat at the human-animal-environment interface based on collaboration, communication, and coordination across all relevant sectors and disciplines with the ultimate goal of achieving optimal health outcomes for both people and animals; One Health is applicable at the subnational, national, regional, and global level’

Source: FAO–OIE–WHO (23)
Challenges for measuring the impact of One Health

The first challenge in measuring 'something' is knowing what that 'something' is. Epidemiologists rely on case definitions, i.e. clinical and laboratory descriptions, in order to measure disease occurrence. In providing a definition for One Health in the new FAO–OIE–WHO Tripartite Zoonoses Guide, the FAO–OIE–WHO Tripartite has provided the foundation for measuring the impact of One Health.

The next challenge is the recognition of what specifically is needed and why. The One Health community recognises that impact measures are one of the key requirements for supporting sustainability in One Health planning and resource mapping and in implementing the available frameworks, assessments and prioritisation tools. However, while many authors have described the One Health network, tools and processes that are available (11, 23, 24, 25, 26, 27), very few provide examples of where One Health indicators have been developed and data collected, analysed and used (18). On the whole, the One Health community successfully communicates the need for, and the benefit of, the One Health approach and the expected outcomes. Most publications and websites focus on these benefits and on arguments for implementing the One Health approach, but efforts are under way that emphasise the need for measuring One Health impacts (28, 29). Again, a core consideration is not overburdening countries while providing decision-makers with key information for measuring the impact of One Health.

Unquestionably, the conversation on the need to collect and provide government decision-makers with country-level data on One Health's impact to help justify policy decisions and resource allocations has commenced. There have been a number of publications that have discussed the value of understanding the financial and economic aspects of One Health and have argued the case for investing in One Health. For example, Rushton et al. place One Health in its historical context and describe why the One Health approach also makes sense for the current and future environment (17). They argue that One Health investment is, in fact, common sense, and explain in concrete terms ‘the economic logic for investment in One Health’ and even how resources might be allocated under budget constraints. Also, several recent World Bank documents consider the ‘value of investing in One Health’ in global financial terms and disease costs (24, 30). In particular, the World Bank's People, Pathogens and Our Planet (30) provides:

a) an ‘assessment of the funding requirements to bring public human and animal (domestic and wild) health services up to OIE and WHO standards’

b) information for planners on the appropriate amount and allocation of funds among the sectors and average cost of different functions

c) ‘a quantitative estimate of the potential efficiency and a qualitative description of the effectiveness gains resulting from the application of the One Health concept’.

Narrod et al. developed a comprehensive framework for assessing the societal cost of zoonotic diseases across all involved sectors (31), and other authors have developed frameworks for evaluating One Health using both quantitative and qualitative methods and involving key stakeholders (28, 29). Still others have focused on specific diseases, such as rabies, estimating the global burden of disease and the resources needed for elimination (32, 33).

Another aspect of measuring impact is identifying means to monitor and evaluate One Health operationalisation. In this regard, the World Bank suggests One Health indicators in their Operational Framework for Strengthening Human, Animal and Environmental Public Health Systems at their Interface (24). Similarly, the Tripartite Zoonoses Guide suggests One Health indicators that countries can use in the monitoring and evaluation of One Health operationalisation in their national contexts (23). Particularly significant in the World Bank framework document is that the proposed core indicators of successful One Health operationalisation include some that are sector focused (e.g. JEE and PVS Pathway missions) along with disease-specific and multisectoral measures (e.g. One Health functionality and Field Epidemiology Training Programs with human and animal health sectors' involvement). JEEs and PVS evaluations are included amongst the indicators because, although seemingly sector specific, they both require One Health collaboration to successfully assess the complete national picture within their respective sectors. In addition, including both measures when assessing the impact of One Health can bring to light any potential resource imbalances between sectors and provide government decision-makers with the information they need to determine how best to tackle these disparities. This addresses a concern expressed at times that One Health is difficult to operationalise when the key sectors working at the human–animal–environmental interface are not on an equal footing in terms of finances and resources. Having strong individual sectors that are key One Health players is critical to the success of fully implementing a One Health approach. The WHO–OIE IHR–PVS National Bridging Workshop is an example of where countries' human and animal health sectors bring data from PVS and JEE missions together to coordinate zoonotic disease efforts. The multisectoral aspect of One Health might have been seen as a challenge, but since each sector has its own unique indicators that can be used to support the measurement of One Health's operational progress, it can, in fact, improve our understanding of the impact of One Health (8).
The final challenge then is in making sense of all the data and information available among the multiple relevant sectors and in the One Health sphere. Comprehensively measuring One Health’s impact on global health security presents diverse challenges. Some obvious questions are:

- What are suitable indicators for measuring the impact of One Health when the entire approach calls for the involvement of multiple sectors and disciplines?
- How do we collect and compare single-sector versus multisectoral indicators?
- How does one go about measuring the impact of a wide array of components including, for example, infrastructure development, financing, laboratory and surveillance capacity, preparedness and response and communication?

Synergies and collaborations between multiple sectors and disciplines are at the heart of the One Health approach but, for a number of reasons, these interactions can sometimes complicate attempts to implement the One Health approach and/or make it difficult to obtain an accurate picture of the impact of One Health initiatives. Firstly, the human, animal and environmental health sectors, and other relevant sectors involved, typically start with different levels of political will and resources and different funding and organisational structures, which immediately presents difficulties for the implementation of a One Health approach. Secondly, to secure funding, individual sectors may take credit for a health security advance that was, in fact, achieved through multisector collaboration, meaning that the positive impact will be attributed to a single-sector initiative rather than the multisector One Health approach. Thirdly, obtaining a clear picture of the impact of One Health is complicated by the fact that individual sectors may view the impact differently, because depending upon the time period assessed and what specifically is being assessed, it may be positive for one sector and negative for another (e.g. banning trade in civets to prevent the transmission of severe acute respiratory syndrome [SARS] potentially prevented zoonotic transmission but impacted livelihoods). Other factors that make it difficult to obtain an accurate picture of the impact of the One Health approach include controllable and uncontrollable catastrophic events (e.g. war, civil unrest, environmental destruction, natural disasters, population growth, human displacement, and gender and ethnic imbalances), as they can offset any gains in global health security that have been achieved through the One Health approach.

The barriers to global health security can seem endless and often beyond the control of any one entity. While crises, such as environmental destruction, civil unrest and war, population displacement, and population growth, may strongly demonstrate the need for a One Health approach (17), they can also hinder or prevent One Health implementation and complicate efforts to obtain a true measure of One Health’s impact. The SDGs focus on combating these crises, and other initiatives, such as the One Planet Summit, complement the One Health approach by calling for collective action to ‘ensure the well-being and security of worldwide populations’ (12). The Second One Planet Summit specifically stated, ‘In light of the emergency caused by the ecological, social and economic impacts of climate change, the climate challenge is a shared responsibility that requires the mobilisation of and cooperation between everyone: governments, the public and private sectors, and civil society’ (12). The objective of the One Health approach is to achieve optimal health outcomes for all; strikingly, the global community has made a commitment through the SDGs to share responsibility in resolving all barriers to global health security.

While measuring One Health’s impact on global health security does have varied challenges, what is telling is that the past two decades have seen a demonstrable global commitment to taking a One Health approach to best protect the health of people and animals living in our shared environment. The One Health community is committed to creating a sustainable way of working in building global health security.

Possible solutions for evaluating the impact of the One Health approach on global health security

One Health has recognisable benefits to global health security in building collaboration, coordination and communication to address health threats at the human–animal–environment interface. The task, then, is to provide decision-makers with impact data that will ensure the sustainability of One Health’s implementation. As stated, a current challenge for the One Health community is how to go beyond the call for action and key principles to ensure the sustainability of One Health. Several common idioms come to mind when considering possible solutions to providing decision-makers with the necessary One Health measures: ‘no need to reinvent the wheel’, ‘making the most of what you have’, ‘a chain is no stronger than its weakest link’ and ‘imitation is the sincerest form of flattery’. The basic question in considering the impact of the One Health approach on global health security is how to use available information in a manner that does not
overburden countries and is suitable in different national and cultural contexts.

Possible solutions include building on the synergies among the sectors as promoted by One Health. Notably, in terms of 'no need to reinvent the wheel' and 'making the most of what you have', the FAO–OIE–WHO Tripartite, among others, has made a concerted effort to document currently available One-Health-related tools, processes and materials, including both single-sector and multisectoral tools (23, 24, 36). Among the aims of documenting these tools and processes is the desire to: a) provide stakeholders with a complete list, and potentially a useful description, of available One Health tools, processes, and materials and how they are used; and b) identify any other tools, processes or materials that may be needed to fully implement the One Health approach. These tools, processes and materials may have their own indicators that, as already recognised by the World Bank and others, could also serve as indicators to provide additional evidence on the impact of One Health. The author would suggest, however, that the next step is the development of an actual algorithm based on these One-Health-related indicators for countries to use in their analyses.

Regarding possible resource imbalances among the sectors, the One Health impact calculations need to consider that ‘a chain is no stronger than its weakest link’. While other authors have suggested multisectoral economic impact assessments (8), the author would argue that proposals for One-Health-related indicators, by nature, must also include single-sector-specific indicators. This point on incorporating single-sector-specific perspective goes back to the argument that decisions using the One Health approach may result in different outcomes – either negative or positive, in the short term or the long term – for different sectors. Including these sector-specific indicators will allow governments to optimise One Health efforts and adjust policy decisions and resource allocation for overall benefit.

The last proposed solution closely aligns with the FAO–OIE–WHO Tripartite’s focus on the SDGs and falls into both the camp of ‘no need to reinvent the wheel’ and that of ‘imitation is the sincerest form of flattery’. The UN Department of Economic and Social Affairs (UN DESA) is calling for ‘submissions of good practices, success stories and lessons learned in the implementation of the 2030 Agenda and the SDGs’. The purpose of this call by UN DESA to other entities supporting the SDGs, the One-Health-specific best practices potentially could be analysed using the UN DESA or others' methodologies.

Conclusions

As suggested by multiple authors, One Health does have the necessary impact indicators, if not yet the processes institutionalised at country level, for measuring One Health’s impact on global health security. One Health champions and implementers should be applauded in pushing for what seems to be a commonsense approach that builds on synergies to improve resource use at the human–animal–environment interface. Many entities have taken up the call and institutionalised a One Health approach, indicating the global community’s view of One Health's potential impact on global health security. This uptake includes, for example, countries developing or sustaining One Health coordinating mechanisms and shared animal and human health laboratories and outbreak responses. At the international and intergovernmental level, it also includes One Health concepts in the FAO–OIE–WHO Tripartite MOU, the WHO JEE Monitoring and Evaluation Framework and the PVS Pathway.

The synergies promoted by One Health could be considered as ‘shared responsibilities’ in supporting global health security and the SDGs. For example, the different sectors and disciplines involved in One Health share a commitment to using consistent language around the foundation of One Health to better communicate with decision-makers and stakeholders. This standardisation and clarity avoids unnecessary confusion, thereby improving the process of determining policy decisions and resource allocations. The multiple sectors and disciplines should also commit to sharing responsibility for the equitable allocation of resources in the multisectoral, One Health efforts to build global health security. This key aspect of shared responsibilities is essential to the sustainability of the One Health approach in building global health security.
Importance de l’approche Une seule santé pour améliorer la sécurité sanitaire mondiale et atteindre les objectifs de développement durable

J.R. Sinclair

Résumé
L’approche Une seule santé soutient la sécurité sanitaire mondiale en améliorant la coordination, la collaboration et la communication à l’interface entre les humains, les animaux et l’environnement afin de répondre aux menaces qui leur sont communes, qu’il s’agisse des maladies zoonotiques, de la résistance aux agents antimicrobiens, de la sécurité sanitaire des aliments ou d’autres encore. Au cours de la dernière décennie, les pays ont peu à peu adopté l’approche Une seule santé et perçu les bénéfices qu’elle apporte. Toutefois, pour asseoir la durabilité des efforts déployés selon l’approche Une seule santé, les principaux pionniers et acteurs de sa mise en œuvre doivent recueillir des données sur l’impact de cette approche au niveau national et les communiquer aux décideurs politiques afin de les aider à justifier les politiques menées et les allocations de ressources. En raison de l’ampleur de l’approche Une seule santé et du caractère souvent globalisant qu’elle peut présenter dans la promotion des synergies pluridisciplinaires et intersectorielles, la communauté Une seule santé rencontre quelques difficultés à déterminer des indicateurs d’impact spécifiques permettant d’évaluer formellement les résultats positifs d’Une seule santé. Dans cet article, l’auteur a) fait le point sur la perception actuelle des bénéfices reconnus de l’approche Une seule santé dans le contexte de la sécurité sanitaire mondiale ; b) examine les défis liés à l’estimation de l’impact d’Une seule santé ; c) propose quelques solutions envisageables pour évaluer cet impact sur la sécurité sanitaire mondiale.

Mots-clés
Importancia de la noción de Una sola salud para promover la seguridad sanitaria mundial y los Objetivos de Desarrollo Sostenible

J.R. Sinclair

Resumen
La filosofía de Una sola salud favorece la seguridad sanitaria mundial porque mejora la labor de coordinación, colaboración y comunicación en la confluencia de personas, animales y medio ambiente para afrontar amenazas sanitarias comunes, como puedan ser enfermedades zoonóticas, resistencias a los antimicrobianos o peligros para la inocuidad de los alimentos. De un decenio a esta parte, en un país tras otro, la noción de Una sola salud ha sido aplicada en la práctica y deparado indudables beneficios. Sin embargo, para inscribirla duraderamente en este quehacer, quienes la promueven y pugnan por aplicarla deben reunir datos que demuestren su incidencia real en cada país y hacer llegar esos datos a las instancias decisorias de los gobiernos para que estos puedan fundamentar en ellos sus decisiones sobre políticas y sobre distribución de los recursos. Por la propia amplitud de la noción de Una sola salud, percibida a menudo como una filosofía global para promover sinergias entre múltiples disciplinas y sectores, quienes trabajan en el tema han tenido dificultades para dar con indicadores referidos específicamente al impacto de Una sola salud que ayuden a evaluar oficialmente los éxitos que haya podido deparar. El autor procede a: a) repasar brevemente las observaciones actuales sobre las reconocidas ventajas de abordar las cuestiones de seguridad sanitaria mundial desde la óptica de Una sola salud; b) examinar los problemas que se plantean para cuantificar el impacto de esta filosofía; y c) proponer posibles soluciones para determinar el impacto de Una sola salud en la seguridad sanitaria mundial.

Palabras clave

References


