

IMPROVING GLOBAL
HEALTH SECURITY
THROUGH ONE HEALTH



USAID
FROM THE AMERICAN PEOPLE

ONE HEALTH INTERVENTIONS

An Assessment of Outcomes

Preparedness&Response
ONE HEALTH IN ACTION

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FOREWORD

One Health is an interdisciplinary, collaborative effort to attain optimal health for people, animals, and the environment. Although the expected benefits of One Health are significant and the costs of poor coordination potentially high, solid evidence of One Health outcomes remains scarce. Because of the “limited application of One Health in practice” (Berthe et al., 2018, pg. 32), many of the approach’s benefits have been based on modeled projections rather than outcomes of actual interventions (Baum et al., 2017). These predicted benefits may not be compelling enough to justify country-level investments in One Health (Baum et al., 2017).

This research aims to identify promising applications of the One Health approach for further analysis. It looks at how greater awareness of the approach, mechanisms for One Health coordination, and information sharing – outcomes themselves – have also strengthened specific multisectoral¹ activities to prevent, detect, and respond to zoonotic diseases and other emerging health threats, including antimicrobial resistance. While it is difficult to establish a causal chain between these efforts and improved health outcomes, anecdotal evidence indicates that prevention, detection, and response activities can yield better results when a multisectoral approach is used. Moreover, this research points to early and promising signs of health systems strengthening outcomes (e.g., the institutionalization of coordination among key ministries) and improved human health outcomes (e.g., reduced time to detection and confirmation, leading to fewer infections) resulting from One Health coordination.

This research is a first step in advancing efforts to evaluate the impact of One Health approaches. More must be done to catalog and assess examples of One Health in action. Only further research and evaluation can yield the evidence to persuade governments and donors to scale up investment in One Health coordination.



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¹ “Multisectoral” means different things in different country contexts. Ideally, the term “multisectoral” describes approaches and efforts that are a) interdisciplinary, including One Health technical expertise from the disciplines of animal health, human health, and the environment at a minimum; b) interministerial, in that they include ministries responsible for a national government’s preparedness and response to a disease outbreak, such as finance, interior, military, and others; and c) includes both the public and private sector. In practice, however, the authors have tried to be specific about what multisectoral means in context.

01 INTRODUCTION

THE ECONOMIC AND HUMAN COSTS OF PUBLIC HEALTH THREATS AT THE HUMAN-ANIMAL-ENVIRONMENT INTERFACE

\$20B

EST. FINANCIAL COST OF HIGHLY-PATHOGENIC AVIAN INFLUENZA (HPAI) IN ASIA (2004–2009)

486/282

HUMAN CASES AND DEATHS FROM HPAI IN ASIA (2004–2009)

\$10B

COST OF THE EBOLA OUTBREAK IN WEST AFRICA (2013–2016)

28,000/11,310

HUMAN CASES AND DEATHS FROM EBOLA IN WEST AFRICA (2013–2016)

\$100T

EST. COST BY 2050 OF ANTIMICROBIAL RESISTANCE (AMR)

10M

EST. DEATHS ANNUALLY FROM AMR

2.4B/2.2M

ANNUAL HUMAN CASES AND DEATHS FROM THE TOP 13 NEGLECTED ZOO NOTIC DISEASES, INCLUDING ANTHRAX, BRUCELLOSIS, AND RABIES

Source: World Bank, 2018

The nexus of humans, animals, and the environment is increasingly recognized as an enabling factor for the spillover of zoonotic diseases that threaten human well-being and have high economic costs (see text box). Zoonotic diseases – caused by pathogens that infect both animals and humans – make up more than 60% of infectious diseases (World Bank, 2018). Globally, the top 13 neglected zoonotic diseases, including anthrax, brucellosis, and rabies, account for more than two billion cases and two million deaths per year (World Bank, 2018).

Without timely control of zoonotic disease outbreaks, they can cause pandemics that spill across borders and impact health security on a global scale. And incidences of these diseases are likely to increase as land use, agricultural practices, and climate patterns change, and as the global population grows and becomes increasingly urban (World Bank, 2018).

Addressing zoonotic diseases, as well as antimicrobial resistance, food and water safety, and other threats at the human-animal-environment interface, requires a One Health approach – an interdisciplinary, collaborative effort to attain optimal health for people, animals, and the environment.

The outbreaks of highly pathogenic avian influenza (HPAI) and severe acute respiratory syndrome (SARS) in the early 2000s made clear the human and political imperative of the One Health approach. The HPAI outbreak from 2004–2009 in Asia resulted in 282 deaths and 486 cases and is estimated to have cost \$20 billion (Berthe et al., 2018). The SARS outbreak between November 2002 and July 2003 caused 813 deaths and cost an estimated \$41.5 billion (World Bank, 2018).

These outbreaks helped refocus attention on the global importance of strengthening One Health coordination to prevent, detect, and respond to disease outbreaks (The World Bank, 2012). Countries were called on to develop core capacities to prevent and address disease outbreaks and other public health

threats. WHO set out the International Health Regulations (IHR 2005) (WHO 2016), which outlined core requirements of a country's health system, while the Organization for Animal Health (OIE) established similar requirements through its Performance of Veterinary Services (PVS) Pathway (OIE - World Organisation for Animal Health, n.d.).

Building on these global guidelines, the Food and Agriculture Organization (FAO), OIE, WHO, and the United Nations Children's Fund (UNICEF), as well as the World Bank, and the United Nations System Influenza Coordination, put forth a global approach called *Contributing to One World, One Health – A Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystems Interface* in 2008 (FAO et al., 2008). This approach called for multidisciplinary interaction between the human health, animal health, wildlife, and environment sectors (FAO, 2009). Two years later, the FAO, OIE, and WHO issued a tripartite concept note stressing the importance of One Health coordination and set out a plan to coordinate work on diseases emerging at the nexus of animal and human health and the environment (FAO, OIE, WHO, 2010). The agreement reflected the global consensus that the One Health approach is the best means to address these threats.

Subsequent agreements and frameworks reflect this consensus. The Global Health Security Agenda (GHSA), launched in February 2014, acknowledges the importance of multisectoral approaches to building country capacity to prevent, detect, and respond to infectious diseases and address antimicrobial resistance. As an accelerator for achieving the core capacities required by the IHR (2005) and the PVS Pathway, the GHSA encourages countries to commit to building capacity in priority areas identified through WHO's joint external evaluation (JEE) and the OIE Evaluation process, which assess country capacity to implement the IHR (2005) and the PVS Pathway respectively, including capacity for multisectoral coordination.

In addition, WHO and other global organizations such as the World Bank have sought to help countries put a One Health approach into practice. The WHO Regional Office for Africa's (WHO/AFRO) *Public health events of initially unknown etiology (PHEIUE): A framework for preparedness and response in the African Region* provides detailed guidance on responding to public health events whose cause is initially unknown, including segments on emergency operations centers, alert management, and rapid response teams, among other areas (WHO/Regional Office for Africa, 2014). Similarly, The World Bank's *Operational Framework for Strengthening Human, Animal, and Environmental Public Health Systems at Their Interface* provides technical guidance on adopting a One Health approach, from mapping key stakeholders to enacting governance guidelines (Berthe et al., 2018). The recent WHO working paper *Tackling Antimicrobial Resistance (AMR) Together* offers practical tips on establishing and sustaining multisectoral collaboration for antimicrobial resistance, which are relevant to addressing any number of threats at the human-animal-environment interface (WHO, 2018). By helping countries put the One Health approach into practice, WHO and other global organizations aim to create better health globally, contributing to the Sustainable Development Goals.

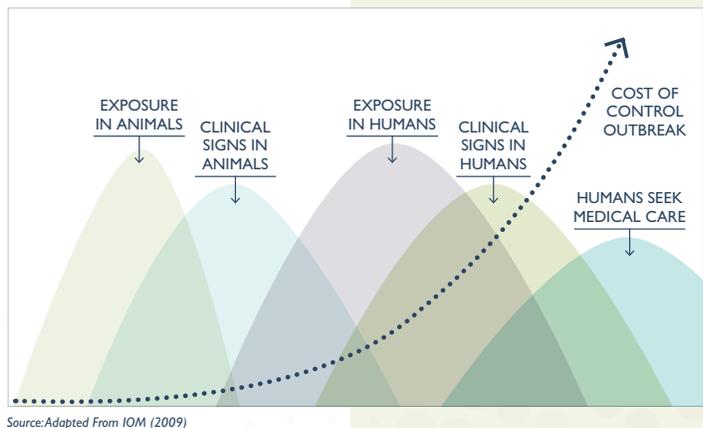
Despite global initiatives and operational guidance that have elevated the One Health approach, planning, budgeting, and executing multisectoral coordination at the country level have proven difficult (Okello et al., 2014). Uneven capacity and resources among key ministries such as health, agriculture, and environment; weak incentives for cooperation; strong structural and bureaucratic incentives to maintain the status quo; and competition for resources among ministries can make coordination difficult.

One Health coordination offers the promise of effectiveness and efficiency gains (World Bank, 2018). A One Health approach that includes sharing information across sectors,

for example, ensures public health staff have timelier, more complete, and more accurate information, enabling them to better prevent, detect, and respond to outbreaks (World Bank, 2018). This, in turn, can lead to lower morbidity and mortality and reduced economic impact (see Figure 1) (World Bank, 2018). Better coordination is also efficient in that in that human and animal health providers can jointly prioritize priority diseases, implement coordinated prevention activities, avoid duplicating tasks, and optimize resources (World Bank, 2018). Other World Bank estimates similarly show significant annual savings from adopting a One Health approach (see text box) (World Bank, 2018).

These benefits are based on modeled projections, in part because the World Bank cites "limited application of One Health in practice" (World Bank, 2018). Concrete examples of the One Health approach are needed to drive investment in One Health and for further analysis. This research has attempted to fill this gap by identifying promising examples of One Health coordination and its outcomes – where a One Health approach seemed better than business as usual. The pages that follow explain the research methodology and key findings, including case studies that highlight the benefits of One Health in action.

FIGURE 1: EARLY CONTROL OF ZOOONOTIC DISEASE IS BOTH COST-EFFECTIVE AND PREVENTS HUMAN DISEASE



\$184 M

EST. ANNUAL SAVINGS OF ADOPTING A ONE HEALTH APPROACH IN LOW- AND MIDDLE-INCOME COUNTRIES IN A LOW-DISEASE PREVALENCE SCENARIO

\$505 M

EST. ANNUAL SAVINGS OF ADOPTING A ONE HEALTH APPROACH IN LOW- AND MIDDLE-INCOME COUNTRIES IN A HIGH-DISEASE PREVALENCE SCENARIO

Source: World Bank, 2018

The findings presented in this publication and its companion are based on analysis of multiple sources. First, P&R conducted qualitative research to elucidate key learning across three broad research themes related to multisectoral coordination:

- What factors enable or support effective multisectoral coordination for health security?
- What factors are essential to sustain multisectoral/One Health coordination for health security?
- How does a One Health approach lead to improved health outcomes?

The research team employed a design and sampling methodology that included informants directly involved in One Health coordination. A literature review and an analysis of the implementation experience of the P&R project also informed the findings in this publication. (There is very limited quantitative data on One Health coordination in literature.)

In qualitative inquiry, the researcher is the instrument. Thus, validity hinges on the skill, competence, and rigor of those conducting the fieldwork. The P&R qualitative research team underwent two days of orientation and training, where each interviewer practiced by piloting semi-structured key informant interview guides. The team debriefed and discussed the processes and results of the interviews, refining the interview guide in the process. Key informant interviews were then conducted in person or by phone and voice over internet protocol (VOIP) and recorded, transcribed, and translated into English (if not conducted in English). A total of 59 stakeholder interviews were analyzed. The use of key informant interview guides ensured that team members covered important elements and questions related to research. The

guide for *project staff and government stakeholders* aimed to capture specific experiences in each informant's country, while the guide for *global partners* aimed to capture global perspectives on One Health.

Primary research used an inductive approach for analysis, which identified and provided systematic descriptions of essential features. A deductive approach then allowed the project team to ask questions for further clarification. The analysis was aided by Transana, a qualitative analysis software.

Verbal consent was obtained prior to the interview, and participants were made aware of the purpose of the research and provided the opportunity to opt out at any time. Interviewees were also informed that participation was voluntary and unremunerated. Not all interviews were presented for analysis in the same manner due to technical difficulties with recording or transcription, or in cases in which informants preferred not to be recorded. In addition, of the 61 stakeholder interviews, two transcriptions could not be completed and notes on the interviews were insufficient, and five interviews were not coded in the qualitative analysis software. While interviews were structured by the key informant interview guides, interviews took different shapes to allow for flexible conversations and open-ended follow-up questions.

Limitations include that the qualitative coding and analysis process was not objective, and P&R's method of co-coding by two researchers may have resulted in duplicated instances of codes or differing interpretations of data. Similarly, there is no objective way to verify data captured through participant interview content.

When asked to identify the outcomes of One Health multisectoral coordination, interview respondents pointed largely to process and non-health outcomes such as the establishment of multisectoral coordination mechanisms, greater awareness of One Health among country stakeholders, expansion of One Health coordination to the sub-national level, and preparedness and response activities carried out jointly by the animal health, human health, and environment sectors. Many stressed the importance of building on these outcomes to further operationalize the One Health approach, for example by dedicating full-time staff to multisectoral coordination mechanisms or allocating budget resources for joint activities to implement preparedness and response plans.

One Health coordination is both a means and an end. Greater appreciation and awareness of One Health and improved coordination mechanisms are outcomes themselves; but they also facilitate multisectoral activities to prevent, detect, and respond to public health threats, whether through assessments, planning, or the dispatch of multisectoral rapid response teams to investigate outbreaks. Many respondents pointed to these activities as a key outcome of the One Health approach.

This paper explores select examples of preparedness and response activities where a One Health approach was clearly better than a siloed approach. The organization of these activities in the paper aligns with the areas set forward in the Global Health Security Agenda, as follows:

1. **PREVENT:** Effective prevention keeps infections from happening, including by preventing diseases from spreading among animals, among humans, and from animals to humans. This paper looks at prevention through the lenses of assessment, planning, training, and simulations.
2. **DETECT:** Rapid detection and confirmation of infectious disease outbreaks enable countries to minimize transmission, both from animals to humans and from humans to humans. This paper looks at how One Health has been applied in the context of disease surveillance and laboratory strengthening efforts.
3. **RESPOND:** Better coordination can result in improved infectious disease outbreak response. This paper explores One Health in the context of rapid response, as well as after-action reviews, which offer an opportunity to learn from response efforts, including how One Health coordination and communication can be enhanced in future responses.

The analysis of the 14 case studies and six vignettes presented in the pages that follow – selected from 40-plus examples identified – is a first step in building a stronger evidence base to increase investment in the One Health approach. Many of the outcomes highlighted here are intermediate outcomes, in that they reflect a strengthened health system. It will take more time, research, and defined metrics to assess how health system improvements lead to meaningful health outcomes such as reduce spillover of diseases from animals to humans and fewer deaths due to disease outbreaks.

PREVENT

DETECT

RESPOND

Experts from the animal health, human health, and environmental sectors can more comprehensively understand health security threats when they work together. With a common understanding of risks, they can focus limited resources on the highest-priority threats, whether institutional gaps identified through the joint external evaluation (JEE) process or specific diseases that pose significant threats to human and economic well-being. Perhaps most importantly, joint assessment creates an impetus for collective action that makes preparedness efforts more effective and efficient.

In Mali, a joint external evaluation assessment demonstrated the importance of having a multi-sectoral coordination mechanism to act on the assessment findings. Côte d'Ivoire, meanwhile, illustrates how a zoonotic disease prioritization exercise can spur multisectoral planning.

MALI'S MALI'S JOINT EXTERNAL EVALUATION (JEE) PROCESS DRIVES HOME THE NEED FOR A FORMAL MULTISECTORAL COORDINATION MECHANISM

Mali's JEE process moved forward conversations on establishing a formal multisectoral coordination mechanism to help strengthen public health capacity under IHR (2005).

When the Government of Mali undertook a JEE exercise in 2017, the country's multisectoral coordination mechanism was nascent, with only terms of reference and a roadmap to establish an operational platform.

Mali's JEE process moved forward conversations on establishing a formal multisectoral coordination mechanism to help strengthen public health capacity under IHR (2005).

The JEE process identified priorities best addressed using a multisectoral approach, demonstrating the need to have human health, animal health, environment, finance, and other ministries at the table. Moreover, the process showed decision-makers the kind of activities for which a multisectoral coordination mechanism was needed. It became clear, for example, that such a mechanism could spearhead efforts to implement key JEE recommendations, including to develop and implement a comprehensive national plan for detecting and reporting on priority antimicrobial resistant pathogens using the One Health approach; finalize and validate the "Integrated National Plan for the Control of Zoonotic Diseases on Mali"; and finalize, validate, and implement a national public health emergency preparedness and response plan.

Thanks in part to the momentum generated by the JEE process, the Government of Mali signed a decree formally establishing a national multisectoral coordination mechanism, the National One Health Platform, under the Prime Minister, in April 2018. In June 2018, the One Health Platform launched, officially formalizing knowledge sharing and collaboration between the human health, animal health, and environment sectors to address pandemic disease threats. The National One Health Platform is currently working toward the adoption of the country's national One Health Strategic Plan, which will help strengthen core capacities under IHR (2005).

Mali's newly formalized multisectoral coordination mechanism, the National One Health Platform, has validated and is working toward the adoption of a national One Health Strategic Plan, which will guide efforts to strengthen the country's core public health capacities under IHR (2005).

CÔTE D'IVOIRE BUILDS ON ITS ONE HEALTH ZOOONOTIC DISEASE PRIORITIZATION PROCESS BY UNDERTAKING JOINT PLANNING ACTIVITIES

In January 2017, the Government of Côte d'Ivoire undertook a One Health exercise to prioritize zoonotic diseases with the support of the CDC, USAID, and WHO. Prior to this exercise, individual ministries had their own independently developed list of priority zoonotic diseases (or no list at all).

The exercise convened representatives of the ministries of health, agriculture, water and forests, and the environment, among others. Participants used the CDC's One Health Disease Prioritization Tool to rank diseases against agreed criteria such as seriousness, epidemic potential, and socioeconomic and environmental impact (US Department of Health and Human Services, CDC, USAID et al., 2017). The ranking process produced a list of five groups of priority zoonotic diseases: tuberculosis; brucellosis; rabies; viral hemorrhagic fevers and arboviruses; and respiratory viruses such as highly pathogenic avian influenza, SARS, and MERS (US Department of Health and Human Services et al., 2017).

The disease prioritization process has both helped ministries agree on priority diseases and stimulated multisectoral coordination to jointly address the priority diseases. One stakeholder said the process helped key players, "understand that they can work together, and they should work together, and also it was in their interest to work together." Key ministries have agreed to develop and adopt preparedness and response plans for the prioritized diseases, as well as adopt a One Health Strategy that reflects the agreed priorities. The country has already begun incorporating a One Health approach in other areas of assessment, such as the JEE, and in planning, for example for the development of a National Action Plan for Health Security.

In addition to Côte d'Ivoire, Bangladesh, Cameroon, Mali, Rwanda, Sierra Leone, Tanzania, Uganda, and others have undertaken a multisectoral zoonotic disease prioritization exercise, setting the stage for joint efforts to address priority diseases. Many have done so with the help of their national multisectoral coordination mechanisms, ensuring the process incorporates a One Health approach.

Côte d'Ivoire shows how a One Health assessment process – a zoonotic disease prioritization exercise, in this case – can serve as a springboard for multisectoral preparedness and response planning.



CÔTE D'IVOIRE

*Outcomes
by the Numbers*

50+

PARTICIPANTS IN THE
CDC-LED DISEASE
PRIORITIZATION WORKSHOP

6

MINISTRIES REPRESENTED
AT THE WORKSHOP

Tanzania uses a multisectoral approach to develop a NAPHS – and empowers a high-level, multisectoral platform to oversee the plan's implementation.

“In terms of forging partnerships, it is not an overstatement to say that the Tanzania JEE and NAPHS development process has created and continues to create partnerships both across national sectors and with international partners and countries in ways not seen before” (Mghamba et al., 2018).

Using a One Health multisectoral approach to develop plans strengthens preparedness and response efforts by ensuring key ministries and partners understand and are committed to fulfilling their roles and responsibilities. Moreover, plans give ministries and partners shared objectives and concrete activities on which to collaborate, helping institutionalize multisectoral coordination over time, in part by building trust among ministries and partners.

This section covers how One Health coordination improves national action plans for health security, preparedness and response plans for public health events of initially unknown etiology (PHEIUE), national and disease-specific preparedness and response plans, and guidelines and standard operating procedures (SOPs) for One Health coordination.

National Action Plans for Health Security (NAPHS). NAPHS are costed plans to improve a country's health security as required by the IHR (2005). They respond to priority actions recommended by the joint external evaluation (JEE), a multisectoral process to identify health system challenges and areas for improved core capacities for preparedness and response (Mghamba, Talisuna, Suryantoro et al., 2018).

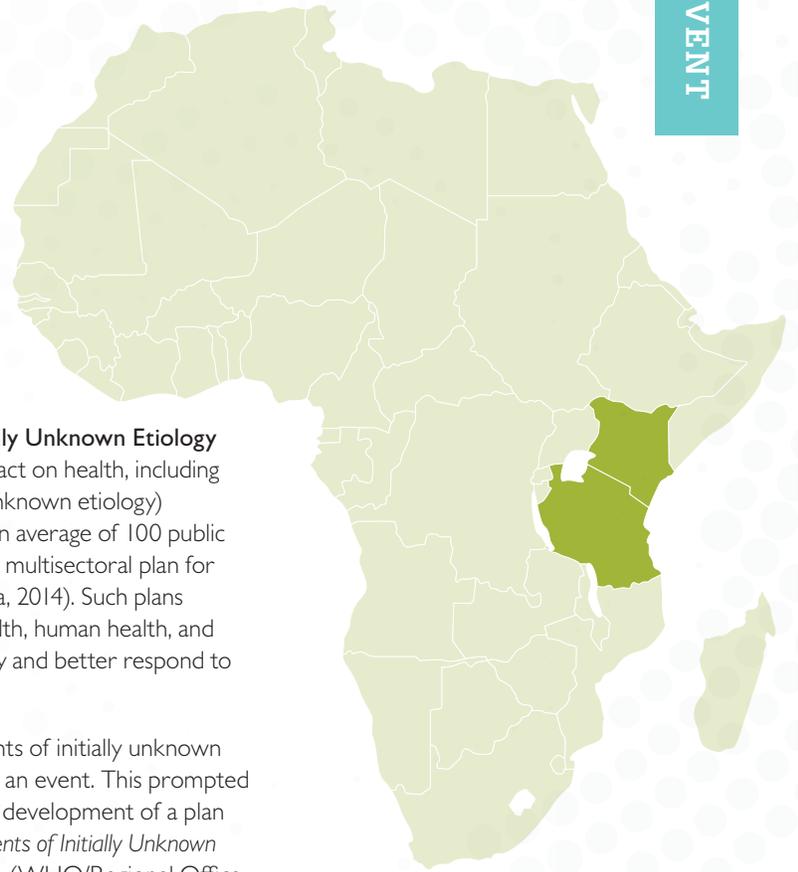
The case of Tanzania, which, in 2017, became the first country to develop a NAPHS, demonstrates the importance of using a multisectoral approach to develop a NAPHS and of designating a high-level, multisectoral mechanism to oversee its implementation.

TANZANIA USES A MULTISECTORAL APPROACH TO DEVELOP A NATIONAL ACTION PLAN FOR HEALTH SECURITY

In February 2016, representatives from more than 15 public, private, and academic institutions in Tanzania completed the first JEE globally. They discovered that, in most of the 19 technical areas under assessment, the country had either “limited” or “developed” capacity (a score of two and three, respectively, on a five-point scale where one is “no capacity” and five is “sustainable capacity”); no areas had “sustainable” capacity (Mghamba et al., 2018).

Using the JEE findings, Government of Tanzania, through support from WHO, became the first country to develop a NAPHS. Using a series of multisectoral planning workshops, key ministries, allied institutions, and implementing partners agreed on a set of priority activities to address the gaps identified in the JEE and costed the activities. The country's One Health Coordination Desk (OHCD) supported this planning process, convening meetings and sharing information.

Through the planning processes, it became clear Tanzania would need to designate an entity to oversee implementation of the NAPHS (Mghamba et al., 2018). The entity's responsibilities would include ensuring alignment with other plans, limiting duplication of efforts, and targeting scarce resources toward health system strengthening initiatives that addressed all public health threats (Mghamba et al., 2018). Given the need to maximize buy-in across sectors and deepen relationships forged during the JEE process, stakeholders agreed that the Prime Minister's Office, through its Department of Disaster Management/One Health Coordination Desk and interministerial steering committee, should be empowered and strengthened as the entity responsible for the plan's implementation (Mghamba et al., 2018).



Preparedness and Response Plans for a Public Health Event of Initially Unknown Etiology (PHEIUE). A public health event is any occurrence with a negative impact on health, including one whose cause is still unknown (i.e. a public health event of initially unknown etiology) (WHO/Regional Office for Africa, 2014). Even though in Africa alone an average of 100 public health events happens annually, countries rarely have in place a generic, multisectoral plan for events whose cause is not yet known (WHO/Regional Office for Africa, 2014). Such plans set the ground rules for bringing together experts from the animal health, human health, and environmental sectors to pool their knowledge to more quickly identify and better respond to such health threats.

In recent years, Kenya has experienced a number of public health events of initially unknown etiology, resulting in the need for guidance on how to respond to such an event. This prompted Kenya's Zoonotic Disease Technical Working Group to spearhead the development of a plan that could cover PHEIUEs, drawing on WHO/AFRO's *Public Health Events of Initially Unknown Etiology: A Framework for Preparedness and Response in the African Region* (WHO/Regional Office for Africa, 2014).

KENYA PRIORITIZES THE NEED FOR A MULTISECTORAL PLAN FOR PUBLIC HEALTH EVENTS OF INITIALLY UNKNOWN ETIOLOGY

Although Kenya's ministries of health and agriculture had sector-specific preparedness and response plans, the country lacked a common plan all sectors could use to jointly address public health events, especially those of initially unknown etiology. In 2016, Kenya's multisectoral Zoonotic Disease Technical Working Group (ZDTWG) prioritized the need to develop a multisectoral preparedness and response plan for PHEIUE.

Through a series of stakeholder consultations and technical working group meetings, the ZDTWG produced a plan to foster multisectoral collaboration in preparing for and responding to emerging pandemic threats, particularly aligned with the country's newly devolved government systems.

The plan guides managers and technical staff in addressing PHEIUEs, strengthens multisectoral coordination, defines institutional structures for implementing the plan, and complements international guidelines on preparedness and response. As one stakeholder said of the plan, "This gives us a step-by-step approach on how to address such an event." The ZDTWG's next steps are to work with individual ministries on developing the standard operating procedures and delivering training in PHEIUE plan implementation, including at the county level.

Kenya recognized that, in PHEIUE, multisectoral coordination was critical to quick diagnosis and containment.

One Health stakeholders believe Kenya's new PHEIUE plan will enhance their response efforts, saying, "This gives us a step-by-step approach on how to address such an event."

BANGLEDESH

*Outcomes by the Numbers*

34 AND 34

NUMBER OF PROVINCES THE GUIDELINES
WERE ROLLED OUT TO

TOTAL PROVINCES IN INDONESIA



Bangladesh shows the power of One Health coordination mechanisms to leverage one-off multisectoral coordination efforts into longer term commitments to disease preparedness and response planning.

Disease-Specific Preparedness and Response Plans.

While disease-specific preparedness and response plans are frequently developed by the Ministry of Health or Ministry of Livestock for zoonotic diseases, a multisectoral, disease-specific preparedness and response plan can outline how animal, human health, and environmental experts would work together to prioritize interventions and share resources. Moreover, they tailor preparedness and response activities to the characteristics of a specific disease. For example, a multisectoral Rift Valley Fever plan can address more of the conditions that might cause or amplify an outbreak, such as climate or environmental changes that affect mosquito populations, the susceptibility of livestock populations to infection, or lack of education and awareness on safety procedures among animal health workers, for example.

Bangladesh offers an illustration of how a One Health approach can strengthen disease preparedness and response plans, as well as how national One Health coordination mechanisms can support the planning process.

BANGLADESH'S ONE HEALTH SECRETARIAT DEEPENS MULTISECTORAL PLANNING IN THE FACE OF AN OUTBREAK OF HIGHLY PATHOGENIC AVIAN INFLUENZA

In January 2017, a poultry die-off on a farm near Dhaka was reported to the Department of Livestock Services. An investigation confirmed that the deaths of more than 700 chickens were caused by H5N1, marking the country's first reported outbreak of HPAI in poultry since 2014.

Within three days of reports of an outbreak, the Department of Livestock Services convened a meeting of the National Technical Committee (Livestock Sector) to review the situation and act to stop the spread of the disease. The meeting included representatives from the Directorate General of Health Services; the Institute of Epidemiology, Disease Control, and Research; the Bangladesh Police; Dhaka City Corporation; the Bangladesh Forest Department; Bangladesh Agricultural University; FAO; and USAID, among others.

Having concluded HPAI is endemic to the country, stakeholders at the meeting agreed on the importance of updating the National Avian Influenza and Pandemic Influenza Preparedness and Response Plan as a whole rather than simply undertaking isolated, sector-specific responses to the outbreak. Bangladesh's One Health Secretariat built on this momentum, convening a series of technical working group meetings, drawing members from different disciplines and sectors, to review and revise the Plan for 2018-2022, beginning with a specific plan for cleaning and disinfection of live bird markets.

Rather than isolated, sector-specific responses to the HPAI outbreak, Bangladesh committed to using a multisectoral approach to revise and improve its overall Avian Influenza and Pandemic Influenza Preparedness and Response Plan, outlining a better coordinated, more comprehensive, and ongoing approach.

CASE STUDY

Thailand Develops an Integrated National Strategic Plan on Antimicrobial Resistance

After years of fragmented efforts to combat antimicrobial resistance (AMR) in Thailand, a 2014 meeting on AMR organized by Ministry of Public Health galvanized decision-makers to commit to integrated planning and action (Ministry of Public Health, Ministry of Agriculture and Cooperatives, n.d.). Following this and subsequent multisectoral meetings, the country set up and empowered a single oversight committee, the interagency National AMR Coordination and Integration Committee (CIC), to advance and coordinate efforts to combat AMR in 2015 (Ministry of Public Health, Ministry of Agriculture and Cooperatives, n.d.).

Since its establishment, the CIC has developed a national strategic plan on AMR that is guided by One Health and informed by the input of hundreds of stakeholders gathered over three public hearings (Ministry of Public Health, Ministry of Agriculture and Cooperatives, n.d.). As part of this strategy, the country is improving AMR surveillance using a One Health approach, in part by regularly assessing the prevalence of self-use of antibiotics through Thailand's biennial national health and welfare survey (Ministry of Public Health, Ministry of Agriculture and Cooperatives, n.d.). In addition, the strategy includes a focus on regulating the distribution of antimicrobials and preventing and controlling antimicrobial resistance in agriculture and companion animals (Ministry of Public Health, Ministry of Agriculture and Cooperatives, n.d.).

Guidelines and Standard Operating Procedures (SOPs). Many countries seek to institutionalize a One Health approach by incorporating it into guidelines, standard operating procedures, and protocols. Clear operational guidelines can streamline multisectoral coordination, both horizontally (across ministries) and vertically (from the subnational to national levels).

Indonesia demonstrates how countries can benefit from clear, formal guidelines on applying the One Health approach. The country's guidelines clarify how the country's subnational One Health mechanisms should coordinate on preparedness and response efforts, based on the work at the national level.

INDONESIA SCALES UP APPLICATION OF THE ONE HEALTH APPROACH WITH NEW GUIDELINES

Indonesia's Kemenko PMK is providing operational guidance on how to apply a One Health approach at the subnational level and in the field where outbreaks can best be stopped.

Indonesia's national multisectoral coordination mechanism, Kemenko PMK, recognizes the importance of clarifying roles and responsibilities in One Health coordination at the subnational level. Human health, animal health, and environment experts at the provincial level are often at the front lines of coordinated prevention, detection, and response.

Since 2015, Kemenko PMK has been developing operational guidelines to clarify the roles, responsibilities, and lines of

communications between and across relevant agencies and sectors at the provincial level. Kemenko PMK used pilot workshops in Riau and West Kalimantan to test and refine the guidelines for practical implementation in emergency and non-emergency ("peacetime") scenarios.

In February 2018, Kemenko PMK officially launched the new *Guidelines for Cross-Sectoral Coordination for Zoonotic and Emerging Infectious Disease Outbreaks*, then organized regional workshops to share them with all 34 provinces in the country. Originally developed for coordination on avian influenza, the guidelines now also provide the foundation for further multisectoral coordination on other types of disease outbreaks at the district and community level. One stakeholder expressed confidence that "...the future of One Health or multisectoral coordination is much clearer" thanks to the new guidelines.

Originally developed to cover coordination on avian influenza, Indonesia's new *Guidelines for Cross-Sectoral Coordination for Zoonotic and Emerging Infectious Disease Outbreaks* now cover other diseases and have been rolled out to all 34 provinces of the country.

CASE STUDY

Sierra Leone Applies a One Health Approach to Strengthening Point of Entry SOPs

In Sierra Leone, during and following the Ebola virus disease outbreak, points of entry were considered critical. Through its Ebola Virus Disease Plan, the country established four specific interventions required of customs and immigration during the outbreak:

- Entry and exit temperature screening of travelers at airports, seaports, and ground ports
- Entry and exit screening of travelers using structured screening forms
- Setting up isolation facilities for suspected cases in strategic locations close to borders
- Secondary screening of travelers showing high temperatures

These interventions, coupled with advanced screening procedures for animal and bushmeat transport, helped Sierra Leone prevent further spread of Ebola virus disease.

KEY FINDINGS SIMULATIONS

Simulations use scenarios to assess the practicality, adequacy, and efficiency of preparedness and response plans, guidelines, and SOPs. They can be powerful tools for convening experts from across sectors to identify resource and capacity gaps and areas where One Health coordination and communication could be strengthened. Moreover, like planning, simulations can serve as catalysts for collaborative problem solving, especially when ministries and multisectoral coordination mechanisms are committed to translating simulation findings into institutional and policy changes.

Cameroon's preparation for the Africa Women Cup of Nations shows how multisectoral simulations can be a powerful convening tool and how committed stakeholders can translate simulation learnings into meaningful improvements to preparedness planning.

CAMEROON USES THE AFRICA WOMEN CUP OF NATIONS AS A CATALYTIC EVENT TO STRENGTHEN PREPAREDNESS AND RESPONSE TO PUBLIC HEALTH THREATS

Events like the Africa Women Cup of Nations, which bring together thousands of people, have the potential to rapidly spread disease across borders.

To prepare for the 2016 tournament, Cameroon's National Program for the Prevention and Fight against Emerging and Re-emerging Zoonotic Diseases

facilitated a private-public sector forum on the coordination of preparedness and response plans. In attendance were the country's main private sector association, leading companies from the extractive industry, and representatives from ministries, the police force, and academic stakeholders, among others.

The forum was followed by joint public-private activities, including a four-day assessment of preparedness

and response efforts in two tournament sites and a tabletop simulation. Taking an Ebola outbreak as its scenario, the simulation produced findings that guided the government in addressing critical capacity and resource gaps, including the need for training in response procedures and additional supplies at regional emergency response centers.

Cameroon convened private and public sector stakeholders to identify preparedness gaps and collectively strengthen preparedness activities in the run-up to a regional sports tournament.

Having identified gaps during the simulation, the government and private sector provided additional personal protective equipment and other supplies to regional emergency response center staff and offered training in response procedures in advance of the event.



CAMEROON

Outcomes by the Numbers

5 AND 7

NUMBER OF
PRIVATE SECTOR
PLAYERS

NUMBER OF
GOVERNMENT, MINISTRIES,
AGENCIES OR DEPARTMENTS
THAT PARTICIPATED IN
THE SIMULATION

59

PARTICIPANTS IN THE
TABLETOP SIMULATION

12

KEY RECOMMENDATIONS
AND ACTION ITEMS

Three simulations to test Laos' Joint National Preparedness and Contingency Plan for Avian Influenza H7N9 and H5N1 led to improved plans and procedures and strengthened regional cooperation.



LAO PDR'S SIMULATION FOR HIGHLY PATHOGENIC AVIAN INFLUENZA (HPAI) DEEPENS THE COUNTRY'S COMMITMENT TO MULTISECTORAL COORDINATION

Laos' first confirmed outbreak of H5N1 in poultry occurred in 2004, resulting in the death or culling of 155,000 birds (WHO/Western Pacific Region, n.d.). Since 2004, Laos has reported outbreaks nearly annually, including an outbreak in 2007 that resulted in two deaths; moreover, it remains at risk of outbreaks in both poultry and human due to its significant poultry population and importation of poultry from regional trading partners such as Cambodia, China, and Thailand, all of which have experienced avian influenza outbreaks (WHO/Western Pacific Region, n.d.).

Eager to assess its preparedness for HPAI, the Government of Lao PDR, the CDC, USAID, and WHO conducted a series of multisectoral simulation exercises and after-action reviews in Champasak, Luang Prabang, and Savannakhet provinces. In Champasak, the site of numerous cases of avian influenza, the simulation in December 2017 to test the country's Joint National Preparedness and Contingency Plan for Avian Influenza H7N9 and H5N1 brought together 100 people from the animal and human health, industry and commerce, and logistics sectors in eight central and southern provinces. The tabletop exercise conducted in Savannakhet in 2018 was regional, to strengthen multisector and cross-border coordination with counterparts in neighboring Cambodia and Thailand.

These exercises helped foster a common understanding of the country's HPAI preparedness plan among implementers and clarified roles and responsibilities during an outbreak. They also identified areas for improved communication and coordination within Lao ministries and departments and with neighboring countries.

As a result of the simulations and after-action reviews, the Government of Lao committed to expanding stakeholder engagement and information sharing; developing or updating plans, SOPs, and training materials; building capacity in risk communications across sectors at the local level; and committing additional resources to avian influenza preparedness and response.

CASE STUDY

Vietnam Uses Simulation to Test Standard Operating Procedures for Priority Zoonotic Diseases

In 2016, Vietnam organized a simulation workshop to test the rabies SOPs under “Circular 16,” the country’s joint guidelines between the Ministry of Health and the Ministry of Agriculture and Rural Development for the coordinated prevention of and response to priority zoonotic diseases.

The workshop in Quang Nam province, which brought together animal and human health experts, identified gaps in implementation and coordination between national, provincial, and district levels and yielded key lessons for future testing and validation of the SOPs. A key government stakeholder said the simulation “provided a practical and useful lesson on how to ensure effective collaboration in outbreak investigation, surveillance, information sharing, and reporting.” Participants also agreed that all documents and steps be revised and improved so that the government can apply and test SOPs for the other priority diseases specified in Circular 16, including HPAI and anthrax. In addition, the country hopes to train professionals from the animal and human health sectors as One Health facilitators, so they can continue building the capacity of provincial staff on joint outbreak investigation and response to advance the country’s global health security.

KEY FINDINGS

TRAINING

CA-FETP trains professionals to become “disease detectives” and, through joint training, to value the perspectives of other sectors and disciplines.

CAMEROON

Outcomes by the Numbers

395

STAFF TRAINED THROUGH
CAMEROON'S FRONTLINE FETP
(TEPHINET, 2018)

52

PROFESSIONALS TRAINED IN
THE TWO-YEAR ADVANCED
PROGRAM (TEPHINET, 2018)

Multisectoral coordination can succeed and be sustained only if its importance is understood by physicians, veterinarians, biostatisticians, scientists, epidemiologists, border guards, and others who collaborate to prevent, detect, and respond to public health threats in their respective roles. For this reason, governments, universities, and donors are investing in today's workforce as well as the next generation of professionals with a role to play in stopping the spread of deadly diseases. USAID's One Health Workforce project, under the Emerging Pandemic Threats Program (EPT-2), has been an especially important leader in this area, as has the CDC through its Field Epidemiology Training Program (FETP).

Cameroon's Field Epidemiology Training Program (CA-FETP) is an example of the power of training people across disciplines and sectors in the same classroom. This approach exposes students to new perspectives and creates a foundation for collaboration when graduates return to their workplaces.

CAMEROON'S FETP TRAINS EXPERTS FROM ACROSS DISCIPLINES AND SECTORS TO DETECT DISEASES

CA-FETP – one of only eight programs accredited by the Training Program in Epidemiological and Public Health Interventions Network (TEPHINET) globally – has been training field epidemiologists since 2010 (TEPHINET, n.d.). Through a two-year advanced training program and Frontline, a three-month, in-service program, CA-FETP is building surveillance and epidemiology capacity at the regional and district levels in Cameroon.

CA-FETP is increasing the number of trained field epidemiologists from both the human and animal health sectors available to investigate disease outbreaks in the country. CA-FETP is doing so with the support of the CDC, as well as USAID's P&R and One Health Workforce Projects, which advise CDC on bringing a One Health approach to FETP. For example, the CA-FETP curricula include a One Health module developed by One Health Workforce and P&R (and whose adoption by FETPs in the Central African Republic and Chad is under discussion). In addition, the CDC has worked to improve that capacity by expanding the program's reach to veterinary field epidemiologists.

By having both human health and veterinary epidemiologists trained in rapid response – and giving them the experience of work together during a field investigation – CA-FETP has helped build the human resources needed to better identify and respond to a zoonotic disease outbreak. The training also builds connections between experts, who take the importance of multisectoral coordination and collaboration back to their respective ministries and workplaces.

Cameroon's FETP programs have graduated both public health and veterinary epidemiologists trained in multisectoral field investigation, improving the country's ability to investigate disease outbreaks.

CASE STUDY

Thailand's One Health Coordinating Unit Helps Develop One Health Leaders

In May 2018, Thailand's One Health Coordinating Unit (OHCU) brought together 45 participants from the eight signatory organizations of Thailand's One Health memorandum of understanding for a One Health Leadership Training. The training was designed to:

- (1) Build in staff the leadership skills critical for the OHCU to fulfill its mandate;
- (2) Create a positive and inclusive team culture and establish the norms for a successful One Health approach;
- (3) Give leaders a chance to develop individual action plans to advance One Health in Thailand; and
- (4) Enhance team cohesion.

Through a series of interactive sessions, participants learned about participatory decision-making, shared their personal action plans, and discussed the next steps for expanding One Health in Thailand. Initial feedback from participants was very positive, and the training successfully cultivated an open, encouraging environment in which multisectoral coordination and collaboration can grow.



KEY FINDINGS

SURVEILLANCE FRAMEWORKS

Globally, surveillance systems for animals and wildlife tend to be weak as compared to human health systems. As a result, some zoonotic disease outbreaks in animals spill over to humans. Even where robust human and animal surveillance systems do exist, they often operate in parallel. Better information sharing between sectors in the short-term and interconnected systems in the long-term could reduce the time it takes to detect disease outbreaks and help stop outbreaks in animals before they spread to humans, lowering their human and economic cost.

While integrated animal and human health surveillance systems may be a long-term goal for most countries, they are a reality in Indonesia. Indonesia's integrated system, SIZE, is a significant achievement in strengthening multisectoral coordination in surveillance.

INDONESIA'S INTEGRATED SURVEILLANCE SYSTEM ENABLES FASTER DISEASE DETECTION AND RESPONSE

Since 2015, Indonesia has been working to develop and introduce its *Sistem Informasi Zoonosis dan Epidemi* (SIZE), a shared system connecting the country's animal health (*Ishiknas*), human health (*EWARN*), and wildlife (*Sehat Satli*) surveillance systems. SIZE will help coordinate risk mapping, information sharing, and decision-making among partners, saving critical time in detecting and confirming a disease outbreak.

This latest iteration of SIZE, the first system of its kind globally, builds on Indonesia's previous work to develop an integrated surveillance system. The new SIZE will better incorporate wildlife data; outline how data will be shared; leverage the system's analytical capabilities to produce more relevant insights for decision-making, such as risk maps and outbreak snapshots; and now engage senior decision-makers in key ministries, not just technical experts.

With the SIZE system developed and clear operating guidelines in place, Indonesia can ensure data reaches all the ministries and professionals who need it in a timely fashion and support joint action on problems identified.

SIZE helps ensure surveillance data reaches all professionals across sectors who need it and supports joint responses to identified problems.

The SIZE system will provide the government of Indonesia with the integrated human and animal health surveillance information necessary to coordinate risk mapping, information sharing, and decision-making among the ministries and key partners – saving critical time in detecting and confirming a disease outbreak.

KEY FINDINGS

LABORATORY CAPACITY

An effective laboratory system enables countries to quickly test and confirm the etiology of a disease and monitor antimicrobial resistance. Often, lab strengthening efforts focus on improving staff skills and upgrading equipment and protocols but fail to establish processes, mechanisms, and data architecture to share findings across sectors. The sharing of samples and disease information is a critical means of preventing the spread from animals to humans.

Guinea demonstrates the importance of incorporating a multisectoral approach into laboratory strengthening work.

GUINEA INCORPORATES A ONE HEALTH APPROACH INTO ITS LABORATORY STRENGTHENING WORK

In the years prior to the 2014 Ebola virus disease outbreak in Guinea, many health clinics lacked the equipment and capacity to conduct routine examinations and laboratory tests, forcing patients to travel long distances for care (Division of Global Health Protection, Global Health, Centers for Disease Control and Prevention, 2017). As a result, some ill people did not seek treatment, returning home instead and, in some cases, contributing to the spread of infectious diseases (Division of Global Health Protection, Global Health, Centers for Disease Control and Prevention, 2017).

Since the outbreak, Guinea has been working to strengthen its human health and veterinary laboratory capacity. In doing so, Guinea has sought to incorporate a One Health approach. In July 2017, the World Bank, with USAID, organized an interministerial meeting to discuss how One Health could guide the World Bank's Regional Disease Surveillance Systems Enhancement (REDISSE) project, which strengthens national and regional capacity for coordinated disease surveillance. At the meeting, members of key One Health ministries agreed to support the construction of the national veterinary level P2 laboratory, advocate creation of a laboratory for the Ministry of Environment, and support establishment of the national network of human, animal, and environmental health laboratories.

As a result of these efforts, Guinea has rehabilitated its veterinary lab and upgraded its public health lab, which can now do more tests than before. Moreover, thanks to the support of the National One Health Platform leadership, a One Health approach has been integrated into the strengthening efforts. For example, processes are now in place to ensure the laboratories coordinate and share information, including through coordination with the National One Health Platform. As one stakeholder reports, "the establishment of a platform which enables us to follow and communicate in real time between the three departments human health, animal health, environment]...is truly a result now. When there is a disease of wild or domestic animals, a very fast consultation is conducted around this platform which has been established."

In Guinea, an interministerial committee is ensuring a One Health approach is incorporated into the country's lab-strengthening efforts.



By involving the National One Health Platform in the development of its national laboratory network strategy, Guinea is bringing a One Health approach to laboratory strengthening and enabling laboratories to better share critical animal and human health information.

KEY FINDINGS

OUTBREAK RESPONSE

Uganda's emergency operations center works closely with the multisectoral national task force to improve the response to deadly disease outbreaks.

With so many actors involved, disease outbreak response benefits from a central location for coordinating information and resources (WHO, 2017), as well as a unifying multisectoral preparedness and response plan. Emergency Operations Centers (EOCs), established in many countries with technical support from WHO and CDC, ensure that response efforts are well-coordinated, efficient, and effective. Though typically housed in ministries of health, emergency operations centers are expected to deploy multisectoral rapid response teams (WHO, 2017), whose members bring collective knowledge and experience that can help them more quickly detect and respond to outbreaks. When working in accordance with multisectoral preparedness and response plans, EOCs, rapid response teams, and other coordination mechanisms can achieve quicker, more effective responses.

Uganda illustrates how an EOC and rapid response teams can mount an effective multisectoral response to disease outbreaks. Moreover, Uganda's experience shows how multisectoral coordination mechanisms—the country's National Task Force in this case—can streamline information sharing among all ministries during outbreak response. Meanwhile, Liberia demonstrates the importance of having in place a sound multihazard preparedness and response plan that can guide the response to disease outbreaks.

UGANDA'S EMERGENCY OPERATIONS CENTER WORKS WITH THE COUNTRY'S MULTISECTORAL NATIONAL TASK FORCE TO STOP OUTBREAKS

Already home to numerous zoonotic diseases such as Marburg and Crimean-Congo Hemorrhagic Fever, Uganda has recently seen the emergence of new diseases as well, including the country's first case of highly pathogenic avian influenza from birds migrating from Europe (Division of Global Health Protection, Global Health, Centers for Disease Control and Prevention, 2018).

To ensure it can respond effectively to disease outbreaks, Uganda established an emergency operations center in 2013 in line with IHR (2005) (WHO, 2017). Managed by five permanent, trained staff, the EOC coordinates and manages all response efforts on behalf of the Ministry of Health. It works closely with the multisectoral National Task Force, which includes members of Uganda's One Health Technical Working Group and the Zoonotic Disease Coordination Office (ZDCO). When an outbreak is reported to the EOC, it alerts the National Task Force, which then mobilizes a multisectoral rapid response team

(which also includes ZDCO members) to gather, analyze, and validate information on the emergency (WHO, 2017). In addition, the national task force ensures the use of a One Health approach during field investigations, prepares situation reports, and facilitates communication across sectors during task force meetings.

Uganda's multisectoral rapid response efforts have helped the country respond to outbreaks faster and more effectively. WHO recently praised Uganda's "exemplary" response to an outbreak of Marburg. The response to the October–December 2017 outbreak, which saw only two fatalities, stood in clear contrast to a 2012 Marburg outbreak, which took longer to control, spread to three districts, and caused 15 deaths (ReliefWeb, n.d.). Rapid response efforts are also deepening support for the One Health approach, with one stakeholder comparing a past anthrax outbreak with one recently addressed using a multisectoral approach: "We had a second similar anthrax outbreak...because of One Health, we never lost anybody. To me, that convinced me beyond doubt that One Health is the way to go.... Because if we had worked individually, we would have lost people." The stakeholder reported that One Health "delivered wonders."



UGANDA

Outcomes by the Numbers



DAYS IT TOOK TO CONFIRM
A YELLOW FEVER OUTBREAK IN
2010 VS. 2016

*(Division of Global Health Protection,
Global Health, Centers for Disease
Control and Prevention, 2018).*

Uganda's improved and faster responses to disease outbreaks are saving lives – and changing minds, with a government stakeholder reporting that the country's successful response to an anthrax outbreak, "convinced me beyond doubt that One Health is the way to go..." The stakeholder went on to point out that a One Health approach "delivered wonders."

Liberia upgraded its Ebola Virus Disease Preparedness and Response Plan to emphasize multisectoral coordination, resulting in dramatically improved plan.

Improved multisectoral preparedness and response planning – followed by multisectoral training at the county level – has helped improve surveillance data capacity and strengthened the country's incident management system, resulting in reduced time to detect and confirm the PHEIUE in Sinoe County.

LIBERIA'S NATIONAL PREPAREDNESS AND RESPONSE PLAN, UPDATED WITH A MULTISECTORAL APPROACH AND SUPPLEMENTED BY JOINT TRAINING, IMPROVES RESPONSE TO PUBLIC HEALTH EVENTS

Liberia's 2016 joint external evaluation (JEE) stressed the need for the country to develop a multi-hazard preparedness and response plan. In response, in December 2016, the Liberian Ministry of Internal Affairs' (MIA) Disaster Management Agency (DMA) organized a multi-ministry workshop to upgrade the country's existing Ebola Virus Disease Preparedness and Response Plan. Supported by USAID, the Ebola plan expanded to a multi-hazard plan to cover public health events of initially unknown etiology and better integrate multisectoral coordination and communications

The DMA used the new national preparedness and response plan to help build the capacity of county-level disaster management committees. The committees, which include the county superintendent, as well as representatives from the ministries of health and agriculture, the Environmental Protection Agency, Customs, and other relevant agencies, received training on the updated multisectoral preparedness and response plan, as well as the country's incident management system. In addition, the MIA supports counties in undertaking preparedness activities, including disaster and risk identification mapping, installation of weather stations and stream gauges, and the collection and collation of human health, animal health, and environmental surveillance data.

On April 25, 2017, the updated plan and training had one of its first tests when Liberia's Ministry of Health notified WHO of several deaths of unknown etiology in Sinoe County. The first case was of a child who fell ill and died several days after attending a funeral. By early May, 26 cases had been reported, including 12 deaths. All who fell ill had attended the same funeral as the initial case.

The National Epidemic Preparedness and Response Committee, led by the National Public Health Institute of Liberia, oversaw the response, which included deploying a multi-disciplinary team to Sinoe County. Together, Liberian lab staff and the CDC tested 56 specimens, and the Ministry of Health announced in early May that specimens had tested positive for meningitis. Because Liberia was able to quickly confirm the cause of the outbreak, responders were able to implement appropriate measures, quickly containing the outbreak to 31 cases and 13 deaths.

LIBERIA

*Outcomes by the Numbers*

70

SPECIMENS COLLECTED AND SENT
TO THE NATIONAL REFERENCE
LABORATORY AND INTERNATIONAL LABS

13

NUMBER OF DAYS BETWEEN
REPORTED OUTBREAK AND CORRECT
DIAGNOSIS OF THE CAUSE

CASE STUDIES

Côte d'Ivoire's Emergency Operations Center Proactively Prepares for an Outbreak of Lassa Fever

After an outbreak of Lassa fever in several West African countries in February 2018, Côte d'Ivoire's Global Health Security Agenda (GHSA) Focal Point convened a multisectoral, multilateral meeting at the country's emergency operations center. Twelve ministries attended the meeting, in which they emphasized the multisectoral nature of the disease and the importance of using the One Health approach to mount an effective preparedness and response effort. Together, they committed to share information, establish a multisectoral task force, and develop a common action plan for Lassa fever.

Ethiopia's One Health Steering Committee Responds to a Rift Valley Fever Outbreak in Neighboring Kenya

In response to a confirmed outbreak of Rift Valley fever in Kenya's northeast Wajir County, Ethiopia's One Health Steering Committee (OHSC) quickly convened key stakeholders to discuss preparedness and response efforts—before the disease spilled over the border. In addition to sharing information with counterparts in Kenya, the OHSC convened a consultative meeting with the Ministry of Agriculture and Livestock Resources (MoALR) and the FAO. At the meeting, participants, as well as staff from the National Animal Health Diagnostic and Investigation Center (NAHDIC) and the Ministry of Health (MoH), agreed to dispatch a multidisciplinary team of epidemiologists, public health, and disease control experts to border communities. They further agreed to update the surveillance and action plans, mount a joint surveillance mission, confirm availability of diagnostic kits, and engage the National Disaster Risk Management Commission to make funds available. A joint situation assessment team from MoALR, the MoH, and NAHDIC was dispatched to the border areas shortly thereafter and conducted an assessment and surveillance exercise using a One Health approach in the *woredas* (districts) bordering Kenya.

KEY FINDINGS

AFTER-ACTION REVIEWS

An after-action review (AAR) is a tool for collective learning. By jointly assessing what went well and what could be improved in response efforts, stakeholders from across sectors and disciplines can identify concrete ways to enhance capacity, improve performance, and strengthen coordination and communication for better preparedness and response. After-action reviews are recommended as part of preparedness training and capacity building efforts in the PHEIUE Framework and by the WHO as a tool to assess core capacities under IHR (2005) (WHO/Regional Office for Europe, 2018).

Tanzania undertakes after-action reviews as part of a commitment to learning and continuously improving its preparedness and response to public health events and emergencies. Moreover, the case of Tanzania demonstrates how after-action review findings can result in concrete recommendations to improve multisectoral preparedness and response capacity.

TANZANIA USES AFTER-ACTION REVIEWS FOR CONTINUOUS IMPROVEMENT

In October 2016, Tanzania's One Health Coordination Desk (OHCD) was informed of confirmed cases of anthrax in humans, domesticated animals, and wildlife in Selela village, Monduli district, in Arusha region. The OHCD quickly dispatched a multisectoral response team to investigate and support the local teams working to control the outbreak. During the response, the team created multisectoral teams from the regional down to the village level.

After the outbreak was contained, the OHCD was eager to assess response efforts. With the help of USAID, the OHCD organized a multisectoral team to conduct an after-action review in August 2017. The review included an analysis of reports and records of the outbreak investigation, as well as outbreak

preparedness and response guidelines for the human and animal health sectors. OHCD also interviewed officials involved in the outbreak response at the national and subnational levels, as well as members of affected communities.

The AAR found several preparedness and response gaps, including in One Health coordination and information sharing at the subnational level. As a result of this finding, the Arusha region strengthened the One Health teams set up during the outbreak investigation, including by clarifying the team's composition and member roles and responsibilities. The One Health teams also prepared an action plan to prevent and control anthrax, which had become recurrent in the area. Arusha's One Health teams now serve an example to other regions.

Based on the after-action review findings, Tanzania's Arusha region strengthened the One Health teams established during the outbreak and developed a plan to prevent and control anthrax, a recurring problem in the region.

Tanzania's AAR results in stronger One Health communication and collaboration at the subnational level, and improved anthrax preparedness and response planning nationally.

This assessment of multisectoral coordination found numerous examples of countries applying and benefiting from a One Health approach, from more robust preparedness and response plans to quicker response times to disease outbreaks. Moreover, there are indications that the practice of One Health is being institutionalized, whether in the formalization of multisectoral coordination mechanisms or the nation-wide adoption of guidelines on multisectoral coordination.

However, fully institutionalizing a One Health approach in prevention, detection, and response activities is a lengthy process that requires continued investment and sustained commitment. There is still much to be done to expand and deepen coordination before definitive evidence of improved health outcomes can be documented.

In short, despite its challenges, multisectoral coordination offers the promise of effectiveness and efficiency gains. But further research is needed to better document those gains, especially in terms of health outcomes and impact. Through conversations with key informants and our own qualitative and desk research, we have identified three key areas for continued research and analysis.

RECOMMENDATIONS

First, there is a clear need to continue to collect and disseminate additional successful examples of multisectoral coordination. These stories, even if anecdotal, can make tangible the concept of a One Health approach and its benefits. And stories can be powerful motivators for continued investment in multisectoral coordination.

Second, there is a need to assess the impact of multisectoral coordination using more rigorous approaches. Most countries are in the early days of using a One Health approach and, as such, it may take time before research can measure the approach's impact on health security. But it is worth beginning to think about metrics for assessing One Health's impact now, as well as counterfactuals about likely outcomes absent a multisectoral approach. Evidence, especially in terms of human, economic, and financial benefits, will be critical to convince decision-makers, especially those who control budgets in ministries of finance and ministry-level budget offices, to increase investment in multisectoral coordination.

And finally, in addition to showing that a One Health approach is beneficial, it is important to understand the multisectoral mechanisms that make it work. A companion piece to this paper, "Multisectoral Coordination that Works," begins to fill this gap by looking specifically at how national multisectoral coordination mechanisms drive multisectoral coordination, as well as what makes them sustainable.

“We need to develop something like a cost-benefit analysis that can be read by the politician or the policy decision-maker. They know the importance of One Health, the importance of communication, coordination, collaboration within each sector, and the importance of preventing disease. We're giving them data, but what they need most is evidence that the cost that they need to put is actually beneficial for national and local levels.”

—GLOBAL KEY INFORMANT

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