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## USAID EMERGING PANDEMIC THREATS 2 PROGRAM EVALUATION

**March 2018**

This publication was produced at the request of the United States Agency for International Development. It was prepared independently by Constance A. Carrino, Daniel R. Lucey, and Marguerite Pappaioanou.

Cover Photo: Monks distribute masks at Mahabodhi Temple in Gaya, India for protection against H1N1 influenza. Courtesy of Ayan Banerjee.

# EMERGING PANDEMIC THREATS 2 PROGRAM EVALUATION

Reduce risk and impact of emerging pandemic threats  
using a One Health approach

March 2018

USAID Contract No. AID-OAA-C-14-00067; Evaluation Assignment Number: 405

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This document was submitted by GH Pro to the United States Agency for International Development under USAID Contract No. AID-OAA-C-14-00067.

# ABSTRACT

The Emerging Pandemic Threats 2 (EPT2) program assists countries to reduce the risks and impact of pandemic threats, applying a One Health (OH) approach. Implementing partners include three projects—PREDICT 2, One Health Workforce, and the Preparedness and Response Project—and partners the Food and Agriculture Organization, and the World Health Organization. This midterm evaluation identifies strengths and challenges in EPT2, re-evaluates its initial priorities in light of the evolving state of science and the work of other partners, and provides feedback to EPT2, USAID and the U.S. Government’s Global Health Security Agenda (GHSA).

EPT2 is credited with raising awareness and understanding of the importance of a OH approach, serving as a catalyst to bring government sectors together into the approach, strengthening laboratory and surveillance capacities, strengthening the current and future workforce capacity, and promoting cross-sectoral collaboration and country ownership. Among EPT2’s contributions to knowledge is its work in detecting emergence, prediction models, work on triangulation (i.e., wildlife-livestock-humans) to study spillover, as well as work in risk mitigation and developing relevant tools and technologies for a OH approach. EPT2 contributes to the success of the GHSA, and fills a critical niche in country capacity building for multisectoral coordination and the agriculture/livestock area of animal health. It is expected to continue helping countries sustain the benefits of the work on which they have partnered and is encouraged to complete its triangulation studies as a benefit to countries and the OH field at large.

# ACKNOWLEDGMENTS

Thank you first to our USAID evaluation coordinator, Ashna Kibria, and GH Pro Project Manager Lindsay Harnish, who provided excellent guidance and support throughout this complicated evaluation and kept us moving. Thank you also to Dennis Carroll, Alisa Pereira, Andrew Clements, Tiffany D’Mello, and Cassandra Louis Duthil for answering our questions, and to Julie Klement, Melinda Pavin, Randi Rumbold, and Katie Hyde at GH Pro for good insights and support along the way.

Heartfelt thanks to Gregory Adams in Uganda, Lisa Kramer in Kenya, Sudarat Damrongwatanapokin and Dan Schar in Thailand, and Oanh Kim Thuy and Michael O’Leary in Vietnam for arranging a wide array of in-depth interviews and program visits, and for your own candid input. And to our coordinators, Pornvilai Pornmontarut, Hong Nguyen Thuy, and Carol Asimwe, thank you for making sure we were never late. Thank you to Mounkaila Abdou Billo, Tim Meinke, and Kelly O’Neill for organizing stakeholder discussions with your in-country colleagues.

We appreciate the input from members of the Emerging Threats Division and their colleagues in USAID/Washington and around the world within USAID, EPT2 Program implementing partners, governments, universities, and other U.S. agencies and international organizations. Thank you.

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# ACRONYMS

AFENET	African Field Epidemiology Network
AI	Avian influenza
AMR	Antimicrobial resistance
AOR	Agreement Officer's Representative (USAID)
AP	Action Package
ASL2050	Africa Sustainable Livestock 2050
CA	Cooperative Agreement
CDC	U.S. Centers for Disease Control and Prevention
CGH	Center for Global Health (CDC)
CITES-MA	CITES Management Authority (Vietnam)
CRESAR	<i>Centre de Recherche pour la Santé des Armées</i> (Military Health Research Centre, Cameroon)
DAH	Ministry of Agriculture and Rural Development (Vietnam)
DAI	Development Alternatives Incorporated
DfID	United Kingdom Department for International Development
DOD	U.S. Department of Defense
DRC	Democratic Republic of the Congo
DTRA	Defense Threat Reduction Agency (DOD)
ECTAD	Emergency Centre for Transboundary Diseases (FAO)
EID	Emerging infectious disease
EIDITH	Emerging Infectious Diseases Information Technology Hub (PREDICT 2)
ELVIS	Exploring Livestock-Virus Interface in Southeast Asia
EOC	Emergency Operations Center
EPT	Emerging pandemic threat
EPT1	Emerging Pandemic Threats 1 Program
EPT2	Emerging Pandemic Threats 2 Program
ETD	Emerging Threats Division (USAID)
FAO	Food and Agriculture Organization of the United Nations
FETPV	Field Epidemiology Training Program for Veterinarians
GDPM	General Department of Preventive Medicine (Vietnam)
GH	Bureau for Global Health (USAID)
GH Pro	Global Health Program Cycle Improvement Project

GHSA	Global Health Security Agenda
GISRS	Global Influenza Surveillance and Response System (WHO)
GLEWS	Global Early Warning System (FAO)
GVP	Global Virome Project
HIDN	Office of Health, Infectious Disease, and Nutrition (USAID)
HPAI	Highly pathogenic avian influenza
ID	Office of Infectious Disease (USAID)
IFRC	International Federation of Red Cross and Red Crescent Societies
IOM	Institute of Medicine
IRAT	Influenza Risk Assessment Tool (CDC)
IRB	Institutional Review Board
JEE	Joint External Evaluation
JICA	Japan International Cooperation Agency
LANAVET	<i>Laboratoire National Vétérinaire</i> (National Veterinary Laboratory, Cameroon)
LMT	Laboratory Mapping Tool (FAO)
M&E	Monitoring and evaluation
MAAIF	Ministry of Agriculture, Agro-Industry, and Fisheries (Uganda)
MARD-DAH	Department of Animal Health within Ministry of Agriculture and Rural Development (Vietnam)
MERS	Middle East Respiratory Syndrome
MOH	Ministry of Health
NIH	National Institutes of Health
NIHE	National Institute of Hygiene and Epidemiology (Vietnam)
NRC	National Research Council
NSC	National Security Council
OFDA	Office of Foreign Disaster Assistance (USAID)
OH	One Health
OHB	One Health Bangladesh
OHCEA	One Health Central and East Africa Network
OHP	One Health Partnership (Vietnam)
OH-SMART	One Health Systems Management and Analysis Resource Tool
OHUN	One Health University Network
OHW	One Health Workforce Project
OIE	<i>Office Internationale des Epizooties</i> (World Organization for Animal Health)
P&R	Preparedness and Response Project

PCR	Polymerase chain reaction
PEPFAR	U.S. President’s Emergency Plan for AIDS Relief
PIO	Public international organization
PIRS	Performance Indicator Reference Sheets
POC	Point of contact
PPE	Personal protective equipment
SAF	Strategic Area of Focus
SARS	Severe Acute Respiratory Syndrome
SEAOHUN	Southeast Asia One Health University Network
SOW	Scope of work
TRG	Training Resources Group
UC Davis	University of California-Davis
USAID	United States Agency for International Development
USG	U.S. Government
UWA	Uganda Wildlife Association
VOHUN	Vietnam One Health University Network
VS	Veterinary services
WHO	World Health Organization
WHO-AFRO	World Health Organization Regional Office for Africa
YF	Yellow fever
ZDAP	Zoonotic Disease Action Package (GHSA)
ZDU	Zoonotic Disease Unit (Kenya)

# EXECUTIVE SUMMARY

This performance evaluation has been carried out for the United States Agency for International Development (USAID) Bureau for Global Health (GH) and was designed to provide an independent assessment of USAID’s Emerging Pandemic Threats 2 (EPT2) program (2014-2019). It came after the midpoint of implementation and approximately one-and-a-half years into EPT2’s experience as USAID’s primary implementer for the U.S. Government’s Global Health Security Agenda (GHSA).

## EVALUATION PURPOSE AND EVALUATION QUESTIONS

The purpose of this evaluation was to identify the program’s strengths and challenges, re-evaluate its initial priorities in light of the evolving state of science and the work of other partners, and inform the remainder of the program and future iterations of the program. Specifically, USAID asked five questions:

1. What contributions has the EPT2 program made to strengthening cross-sectoral “One Health” (OH) capacities to prevent, detect, and respond to emerging pandemic threats? How is country capacity for this work being sustained?
2. What contributions has the EPT2 program made to the Ebola/GHSA initiatives in Africa beginning with the June 2015 supplemental funding into EPT2? How did this work affect EPT2’s capacity to meet the original objectives of the program worldwide?
3. How has EPT2 engaged or coordinated with international organizations, donors, and technical partners to improve OH coordination and to prevent, detect, and respond to emerging pandemic threats?
4. Has EPT2 identified or filled key knowledge gaps to improve the effectiveness of prevention (including risk mitigation), detection, and response to emerging pandemics? If so, what are they? What gaps remain in this field?
5. Is EPT2 on track to meet its objectives (as outlined in the EPT2 Monitoring and Evaluation Framework) by the end of the program? If not, which ones are not being met?

## PROJECT BACKGROUND

USAID technical and country experts have advised on zoonotic diseases at the country level for many years, and USAID began its formal, central support for zoonotic diseases in mid-2005 with the Avian Influenza (AI) program, which focused on control of the highly pathogenic H5N1 avian flu. What followed was a series of activities in developing countries focused on preparedness, prevention, and response for the civilian sector and—in partnership with the U.S. Department of Defense (DOD)—the military sector. In 2009, USAID launched the five-year, worldwide Emerging Pandemic Threats (EPT1) program to support detection of new disease threats and build capacities for preparedness and response. Concurrently, in response to the H1N1 flu pandemic originating in Mexico, USAID established an EPT-Plus program to identify, prevent, and respond to novel influenza viruses in China and Vietnam.

Central to USAID’s work on emerging pandemic threats (EPT) is the OH approach to multi-sectoral collaboration, which “recognizes that the health of humans, animals and ecosystems are interconnected. It involves applying a coordinated, collaborative, multidisciplinary and cross-sectoral approach to address potential or existing risks that originate at the animal-human-ecosystems interface.”<sup>1</sup>

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<sup>1</sup> Source: OH Global Network.

EPT2 is a five-year, \$360 million program launched in 2014 to “reduce risk and impact of emerging pandemic threats applying a OH approach.” Program partners include the United Nations Food and Agriculture Organization’s (FAO) Emergency Center for Transboundary Animal Diseases and Animal Health Centre; PREDICT 2: University of California at Davis as prime contractor with EcoHealth Alliance, Metabiota, Smithsonian Institution, and the Wildlife Conservation Society; the Preparedness and Response Project (P&R): DAI Global as prime contractor with Palladium, Training Resources Group (TRG), African Field Epidemiology Network (AFENET), and Fondation Mérieux; One Health Workforce (OHW): University of Minnesota as prime contractor with Tufts University, Southeast Asia One Health University Networks (SEAOHUN), and One Health Central and East Africa Network (OHCEA); and the World Health Organization (WHO) Headquarters Office, WHO Regional Office for Africa (WHO-AFRO), WHO South-East Asia Regional Office, and Global Influenza Surveillance and Response System (GISRS).

Working in Africa and Asia, EPT2 was initially organized around seven strategic focus areas:

1. Developing longitudinal data sets for understanding the biological drivers of viral evolution, spillover, amplification, and spread of new viral threats;
2. Understanding the human behaviors and practices that underlie the risk of evolution, spillover, amplification, and spread of new viral threats;
3. Promoting policies and practices that reduce the risk of virus evolution, spillover, amplification, and spread;
4. Supporting national OH platforms;
5. Investing in the OH workforce;
6. Strengthening national preparedness to respond to events of public health significance; and
7. Strengthening global networks for real-time bio-surveillance.

When this evaluation began in June 2017, FAO was working in 33 countries, PREDICT 2 in 28, P&R in 15, OHW in 13 (and two regions), and WHO had various central grants. EPT2 is centrally funded and managed by the Emerging Threats Division (ETD) in the USAID/GH Office of Infectious Diseases (ID). USAID Mission Points of Contact (POCs) are also supported through program funds in several countries.

## **EVALUATION DESIGN, METHODS, AND LIMITATIONS**

A three-person multidisciplinary team worked on this evaluation from June 19 to October 4, 2017. Constance A. Carrino, Ph.D., led the team; Daniel R. Lucey, M.D, M.P.H., was the senior emerging infectious disease (EID) specialist, and Marguerite Pappaioanou, D.V.M., P.P.V.M., Ph.D., was the senior OH/veterinary specialist. Their evaluation methodology included:

- Briefings, review of official agreement documents, technical reports, and other publications, and a literature review;
- Informational interviews or in-depth interviews with 192 stakeholders from USAID, partner organizations, government, and university counterparts in EPT2 countries, U.S. Government (USG) counterparts, and U.S. and international collaborators and experts in OH and research;

- Two surveys: one of Mission advisors<sup>2</sup> in countries about the program’s contributions to GHSA (19 respondents) and another for in-country EPT2 government and university counterparts (42 respondents); and
- Field visits to Uganda (July 10-14, 2017) and Vietnam and Thailand (Sept 5-15, 2017) and issue-specific calls with Bangladesh, Cameroon, Democratic Republic of Congo (DRC), and Indonesia.

On October 4, 2017, the evaluation team briefed USAID on findings, conclusions, and recommendations prior to drafting this report.

## FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

### Findings

Findings are based on what evaluators learned from all elements of the methodology. They do not reflect the opinions or conclusions of the evaluation team.

#### Question 1: Contributions and sustainability

EPT2 is credited with **raising awareness and understanding of the importance of a OH approach**. Health, agriculture, and environment sector leadership and staff have a greater awareness of their complementary and necessary roles, responsibilities, expertise, experience, and the resources needed to confront EPTs.

The program **is a catalyst to bring government sectors together into a OH approach** through P&R’s assistance in establishing OH platforms and strengthening enabling environments. This work is a multi-year effort. At this juncture, a common concern within OH platforms—especially those that have been shown to be active during an outbreak response (e.g., Cameroon, Uganda, and DRC)—is to keep platforms focused on OH approaches to prevention and detection between outbreaks.

Through PREDICT 2 and FAO, EPT2 is **building the capacity of animal health laboratories** to collect and test specimens, improve laboratory techniques and protocols, and properly use personal protective equipment (PPE). EPT2 also provides laboratory equipment and reagents and develops and implements surveillance programs, introducing new diagnostic technology and tools for laboratory management. In Cameroon, for example, the animal laboratory was able to identify viruses in the animal population during successive outbreaks in 2016: one for highly pathogenic avian influenza (HPAI) H5N1 and one for monkeypox. EPT2 also advises on guidelines and multi-sectoral communication protocols. This work is seen as both essential for animal health to serve as a strong OH partner and as a unique contribution of USAID. International human health partners commented that their agencies did not offer support and assistance to the agricultural/livestock health sector, but that the sector was vital to strengthened prevention, detection, and response to emerging threats. As this work proceeds, respondents suggested countries would benefit from further harmonization of FAO and PREDICT 2 laboratory protocols.

EPT2 is also **strengthening the current and future workforce capacity** through **in-service training in animal health** for government agencies and laboratories. This training includes animal (i.e., livestock and wildlife) sampling techniques, surveillance, laboratory protocols and techniques, biosafety and biosecurity, and OH outbreak preparedness with government agencies and laboratories. Challenges include that many countries in Africa, especially West Africa, lack the capacity to test samples in-country; there is a demand for the Field Epidemiology Training Program for Veterinarians (FETPV) in Asia and Africa.

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<sup>2</sup> The term “Mission advisor” refers to EPT2 and GHSA POCs working in USAID missions. These advisors are centrally funded through the EPT2 and GHSA programs, respectively.

Per in-country respondents, including government officials, researchers, and donors, EPT2's **OH University Networks (OHUNs), which are supported by the OHW project**, are introducing OH awareness, skills, and employment potential for graduate and undergraduate students in public health, veterinary medicine, and related fields. Respondents in government and the international donor community in countries with strong network programs expressed a demand for such students. Government officials said they looked to prominent universities for current and future professionals, as well as to the central and sub-national levels.

**EPT2 promotes cross-sectoral collaboration and country-ownership.** For example, PREDICT 2 entered into protocols with host governments that required sign-offs by the health, livestock, and wildlife health sectors before communicating alerts, status reports, public communications, and publications, or sharing of information to a wider set of stakeholders, including other national and international human and animal health authorities and communities. EPT2 also assists in improving protocols for OH communication around identifying and announcing outbreaks. P&R has advanced the institutionalization of OH platforms by supporting legal frameworks for ongoing multi-sectoral collaboration.

Although it does not have a strategic focus on sustainability, EPT2 has demonstrated **movement toward country ownership**. EPT2 implementing partners are hiring more local and regional representatives and project staff, with Asian countries in particular seeing fewer international consultants. Specimen testing is shifting toward in-country laboratories (rather than shipping specimens to laboratories in the United States). Furthermore, the OHUNs and governments consult on workforce needs more frequently.

## **Question 2: Contributions to Ebola/GHSA and impact on EPT2**

USAID's work in emerging disease threats with pandemic potential is recognized globally and EPT2 is contributing to GSHA, starting with the "prevent, detect, and respond" mantra that guides the initiative. In testimony before a subcommittee of the Senate Committee on Foreign Relations on June 20, 2017, the then-special advisor to the UN Secretary-General noted:

"The U.S. Government has played a major role in infectious disease prevention and control through the work of different government departments, . . . **Much of this work has been made possible through one highly strategic support mechanism—the USAID Emerging Pandemic Threats program**, that has been consistently supported by Congress over the last 12 years and implemented in concert with the WHO."<sup>3</sup>

EPT2 works in 24 of 31 GHSA countries. USAID is focused on four GHSA action packages (APs): zoonotic diseases, real-time surveillance, lab capacity, and workforce development; however, survey results indicate that EPT2 has actually worked in 10 of the 11 APs.<sup>4</sup>

The GHSA Annual Report gives examples of USG contributions, including several in which EPT2 was involved (e.g., problem-solving in Cameroon and DRC outbreaks). Respondents demonstrated the broad involvement and relevancy of EPT2 to GHSA; EPT2 and GHSA POCs in USAID Missions gave numerous examples of the program's work in preventing, detecting, and responding to emerging threats.

Two significant multi-year efforts are underway that underscore the contributions of EPT2's long-term approach to prevention, detection, and response. One is the **Ebola Host Project**, designed to identify a range of animal hosts (e.g., wildlife, livestock, and domestic animals) of Ebola viruses that could be a

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<sup>3</sup> Nabarro, David. Testimony before the U.S. Senate Committee on Foreign Relations on "The World Health Organization and Pandemic Protection in a Globalized World," p. 17.

<sup>4</sup> The exception is the human immunization AP.

source of human infections. It is also designed to identify the behaviors and conditions that may lead to another outbreak of Ebola in Sierra Leone, Liberia, and Guinea.<sup>5</sup> Respondents noted that this activity was challenged by lack of coordination among partners, including studies to identify risk factors, the need to move samples for testing outside the country and, in the case of one country, the absence of host-country approval to disseminate results.

Another EPT2 contribution to GHSA is Africa Sustainable Livestock 2050 (ASL2050), which was launched in 2017. By using lessons learned from the past 35 years in Asia to anticipate similar events that may occur in Africa between 2015-2050, ASL2050 seeks to catalyze policy development regarding the rising demand for livestock as sources of risks for public health (zoonotic pathogens) and the environment. ASL2050 includes six countries—Uganda, Burkina Faso, Egypt, Ethiopia, Kenya, and Nigeria—each with high-level national, multi-sectoral steering committees with oversight activities.

**GHSA also affected EPT2.** The program took on a larger footprint in Africa, including country programs in West Africa and a difficult, time-consuming expansion of a number of FAO field offices. Mission advisors and EPT2 implementing partners took on additional and changing reporting. Constraints around moving Ebola funding among countries slowed implementation.

On the technical side, FAO's expansion resulted in reduced sampling of livestock for longitudinal data and triangulation of data. On the positive side, respondents noted that GHSA's disease prioritization process and work to strengthen a country's capacity to prevent, detect, and respond to zoonotic endemic diseases provided country buy-in to the OH approach and enhanced expertise and skills.

There were new activities to serve GHSA countries, several of which in-country stakeholders and other respondents noted were important program areas to strengthen (e.g., antimicrobial resistance [AMR] related to animal health and emergency response commodities).

### **Question 3: EPT2 engagement**

Respondents consistently expressed appreciation for **USAID filling the essential niche of engaging the animal sector and promoting a OH approach.** In the field, country stakeholders reported EPT2 worked well with governments, and researchers who had worked with EPT2 reported staying current with the work of other national and international researchers. Examples of engagement indicate relevant complementarity:

- U.S. Centers for Disease Control and Prevention (CDC) colleagues and in-country stakeholders cited EPT2's leadership and support for the host country's one health zoonotic disease prioritization workshops under GHSA.
- DOD's Defense Threat Reduction Agency (DTRA) has figured prominently in the biosecurity and other training provided under the OHUNs.
- In research and lab strengthening, EPT2 engages and coordinates with colleagues internationally and in the field, including Oxford University and Pasteur Institute.
- USAID and the World Organization for Animal Health (*Office International des Epizooties*, or OIE) have reopened a dialogue on collaboration.
- Collaborators, including EPT2 implementing partners, suggest EPT2 hold more purpose-driven meetings, solicit more outside advice, and engage more broadly in brainstorming issues.

### **Question 4: Filling key knowledge gaps**

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<sup>5</sup> <https://www.usaid.gov/ebola/global-health-security-agenda> (updated Jan. 31, 2017).

EPT2 fills many key knowledge gaps and some of the tools have become time-tested to improve the program's effectiveness; however, gaps remain.

**Detect emergence to prevent spread of H7N9 AI in Southeast Asia:** EPT2 is contributing to an immediate, preemptive effort to detect and prevent H7N9 AI from spreading from China the way H5N1 AI has since 2003, across Asia into Africa and Europe.

**Improved prediction models:** PREDICT 2 staff and collaborators have a 2017 update of "Global trends in emerging infectious diseases," a paper by Jones et al. published in *Nature* in 2008 that informed the design of PREDICT 1 and 2. The updated version, entitled "Global hotspots and correlates of emerging zoonotic diseases," was published in *Nature Communications* in October 2017.<sup>6</sup>

**Triangulation: wildlife-livestock-humans:** EPT2 is looking for linkages of EPTs in wildlife, livestock, and humans. PREDICT 2, in partnership with FAO, is collecting samples and data pertaining to risks at interfaces in humans, wildlife, and livestock in hot spot areas, and test results determine linkages between and among human and animal disease.

**Risk mitigation:** Efforts to scientifically identify behaviors that increase the risk of spillover, amplification, and spread of emerging infectious diseases (EID) is another key focus in EPT2. Extensive work is being done on most of the five viral families studied in EPT2 (coronavirus, paramyxovirus, influenzas, filovirus, and flavivirus). Translating this work into effective, sustained behavioral change has been extremely difficult, though since the fieldwork for this evaluation was completed, PREDICT 2 reports that the goal of developing structural intervention recommendations has been achieved for five countries, and a behavior change intervention strategy to decrease risk from bats has been developed.

**Tools and technologies highlights:** In-country respondents noted that tools developed and/or piloted under EPT2 demonstrated improvements in effectiveness or efficiency. Examples include Pen-side PCR (polymerase chain reaction) for H7N9; ease of use improvements to PREDICT's Emerging Infectious Disease Information and Technology Hub (EIDITH); and smartphone apps to collect data and provide immediate feedback on human, animal, and wildlife interactions in farms, and provide immediate feedback to farmers on how to improve biosecurity. Respondents also reported using tools developed by EPT2 partners outside of the program, including FAO's Laboratory Mapping Tool (LMT) and the University of Minnesota's OH Systems Mapping and Analysis Resource Toolkit (OH-SMART).

**Gaps identified:** Gaps include linking viral discovery to human health risks, electronic databases for animal disease surveillance, and, within USAID, clear authority and receipt of the raw data supported by EPT2 and future programs.

### **Question 5: Meeting EPT2 Monitoring and Evaluation (M&E) Framework objectives**

Over the last two years, ETD and its program partners developed an M&E Framework that provides quantitative and qualitative indicators for tracking GHSA progress towards achieving EPT2's goal to "reduce risk and impact of EPTs, applying a OH approach." The framework objectives and indicators from March 27, 2017 are shown in Figure 3. Performance Indicator Reference Sheets following the USAID format were completed on April 10, 2017.<sup>7</sup> The evaluation team reviewed the first draft of country data from this system.

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<sup>6</sup> "Advancing the Global Health Security Agenda: Progress and Early Impact from U.S. Investment," Global Health Security Agenda Annual Report (undated), p. 12; and "Global hotspots and correlates of emerging zoonotic diseases," *Nature Communications*, October 2017.

<sup>7</sup> As this report was being prepared, updated versions of the M&E Framework and the Performance Indicator Reference Sheets were published, taking into account experience from the first round of data collection.

At this juncture in EPT2, respondents—regardless of whether they were aware of the ETD M&E Framework (many were not)—felt the following issues were important to understand and act on for program success:

- Policy development (i.e., awareness-raising and support among country health leaders and stakeholders) takes time and cannot fit into a project’s timeframe.
- Countries need to reach sub-national officials with training and sensitization to OH.
- On the scientific side, triangulation will take time, and EPT2’s effort should be focused on sites that are further along.

With a second round of data and country monitoring, combined with field-specific experience, the ETD M&E Framework should help inform whether country programs looking to prevent, detect, and respond to zoonotic threats using a OH approach are moving in the right direction.

## CONCLUSIONS AND RECOMMENDATIONS

Below, we summarize the evaluation’s conclusions and present a complete set of recommendations. The eight conclusions are based on findings garnered through questions and linkages found across those findings. Recommendations are designated for EPT2 if they can be implemented within the program itself; for USAID, the recommendations are ones we believe will require support beyond EPT2 and the ETD (e.g., from USAID, GH leadership, and USAID Missions).

### Conclusion 1: Strategic planning at the country, regional, and global levels

EPT2 is a centralized program that several respondents said lacked in-country stakeholders in strategy development. The evaluation team agrees with respondents who noted that progress and timelines do and will continue to vary by region and between countries and that single “cookie-cutter” approaches will not be useful or acceptable to country stakeholders in the long run. We are also concerned that many respondents believe EPT2 is set up independently from USAID Mission strategies, and that the strategic process does not include coordination with other USAID projects or sectors (e.g., economic growth). Without these investments in participation and strategic clarity at the country level, USAID’s ability to continue a leadership role in this field may suffer.

**Recommendation 1.a:** USAID should ensure that strategic planning for EPT2 centers around in-country stakeholders and includes ETD managers and advisors in Washington, D.C., and the field, USAID Mission leadership, and EPT2 partners, including new USAID GHSA implementing partners as they come on board. When appropriate, strategic planning should occur in concert with other relevant USG and international partners.

**Recommendation 1.b:** At the global level, USAID should create an international advisory council to monitor the progress of its programmatic and research work to reduce the threat of infectious diseases with epidemic or pandemic potential, in keeping with EPT2’s long-term goal.

### Conclusion 2: Addressing immediate threats

Respondents with experience in outbreaks find there is immediate country buy-in for cross-sectoral collaboration when a threat is identified. They also point to the advantages of being preemptive, especially for AI, Middle East Respiratory Syndrome (MERS), Nipah, Ebola, and yellow fever. EPT2 supports important building a cadre of animal health experts with skills necessary during to prevent, detect and respond to outbreaks, including sampling techniques and biosecurity measures. Country stakeholders, including students, learn to use those skills in real time during outbreaks. A strong PREDICT presence in-country provides an important and appreciated “go-to” place for advice.

**Recommendation 2:** USAID should continue to assist countries (or regions) to preemptively address immediate threats, including cross-country activities.

### **Conclusion 3: Strengthening the OH workforce**

EPT2 training is designed to build a pre-service and in-service workforce that knows how to prevent, detect, and respond to infectious disease threats using a OH approach. Many countries in Africa, especially West Africa, still lack the capacity to test samples in-country, and there is an increased need and demand in both Africa and Asia for the FETPV.

EPT2's OH university networks, with technical support from the One Health Workforce project, raises OH awareness, skills, and employment potential for graduate and undergraduate students in public health, veterinary medicine, and related fields. Respondents in government and the international donor community in countries with strong network programs expressed a demand for such students as interns or new hires. Because more-established programs are receiving input from government and alumnae on needed skill sets, they are able to fine-tune their programs. An area requiring clarification is USAID's expectations and the value added by the two regional networks, OHCEA and SEAOHUN.

**Recommendation 3.a:** EPT2 should accelerate support for FETPV and veterinary capacity within in-service and future professional programs and continue to build the capacity of local labs to test samples in-country.

**Recommendation 3.b:** Although national governments are unlikely to directly fund OHUNs, EPT2 should continue to encourage links between the networks and governments regarding the subjects that training should cover, who to train, and what positions graduates will hold.

**Recommendation 3.c:** EPT2 should clarify the intended progression, value added, and role for the regional OHCEA and SEAOHUN networks. Might regional networks become independent regional centers funded directly by USAID?

### **Conclusion 4: Animal disease surveillance**

Biological drivers that ultimately affect human health are key to meeting EPT2's goal and, in turn, advocating for sustained funding for pathogen detection. Among those drivers, wildlife is a neglected area for pathogen detection. The evaluation team believes that studies in Vietnam, Thailand, and perhaps Uganda are far enough along to have sampling and characterizations completed by the end of EPT2. Given the knowledge base on hot spots and animal health expertise in these countries, and their importance as leaders in their regions and beyond, we believe they are good candidates for concerted attention to complete investigations on biological drivers that affect human health.

In identifying viral pathogens, PREDICT 2 has strict protocols for protecting country data. Approval from three pertinent ministries (usually health, livestock, and wildlife) is necessary before findings are released. The evaluation team commends this approach as an avenue for ensuring country ownership. In terms of raw data collected under the project, PREDICT 2 says "the PREDICT Consortium holds the raw data collected, though USAID has access to raw data through the Agreement Officer's Representative [AOR]." While the evaluation team is not qualified to provide a legal opinion on data rights and ownership, we believe clarity is required with respect to USAID's legal authority over data collected, as opposed to "accessed" under PREDICT 2, given the finite nature of the project used to collect the data and the possible future uses for those data.

**Recommendation 4.a:** USAID should investigate if there are linkages between the viral pathogens it identifies and risks posed to human health, especially risks from wildlife.<sup>8</sup>

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<sup>8</sup> Referred to in Question 4 in the "Findings" section (p. 28) as "bi-angulation," or finding linkages between livestock and humans or wildlife and humans.

**Recommendation 4.b:** USAID should complete initiated triangulation sampling and reporting in Vietnam, Thailand, and Uganda by the end of EPT2.

**Recommendation 4.c:** USAID should clarify its legal authority over raw data collected under EPT2 that is in the possession of an EPT2 partner.

### **Conclusion 5: Risk mitigation**

Risk mitigation by behavioral intervention requires an understanding of risk to humans from wildlife and/or livestock. PREDICT 2 identifies pathogens with potential for spillover, amplification, and spread, and develops maps to define, analyze, and/or refine viral pathways and disease risk pathways. FAO has completed work on risk reduction along the value chain. To date, EPT2 has not accomplished as much in this area, except for one example given by USAID and partner respondents of an activity in DRC and the Republic of Congo that followed from understanding risk pathways to instituting practices that reduce risk.

**Recommendation 5.a:** USAID should consolidate and verify risk mitigation data from the ETD M&E Framework for each of the five viral families, with specific examples for known threats (e.g., MERS, AI).

**Recommendation 5.b:** USAID should apply evidence-based interventions that mitigate risk against the priority endemic zoonotic diseases.

### **Conclusion 6: EPT2's OH approach in GHSA**

We applaud how quickly FAO expanded its presence in Africa under EPT2, as well as the strong participation by EPT2 partners in prioritizing zoonotic diseases in program countries, as noted by in-country respondents. It is important to continue to bring a strong OH approach to the implementation of GHSA across all APs, especially as USAID adds partners. Given existing animal and human health silos, this work could include using collaborative learning opportunities in using a OH approach for prioritized endemic zoonosis (e.g., rabies and anthrax). Mission advisors noted the importance of increased attention to AMR for animal health and we agree, especially in the use of antimicrobials in food animals.

**Recommendation 6.a:** USAID should continue to promote a OH approach across all GHSA APs.

**Recommendation 6.b:** USAID should explore further opportunities to address AMR using a OH approach.

**Recommendation 6.c:** Where animal and human health systems are operating separately, USAID should consider using collaborative learning opportunities for a OH approach to preventing prioritized endemic zoonosis (e.g., rabies).

### **Conclusion 7: Technology for OH**

Improved technology is critical to sustaining the capacity building provided under EPT2. Within the program, users give high marks to the current version of PREDICT 2's EIDITH database, designed to collect sampling and location-specific data for PREDICT 2 research and modeling. Other notable technologies include a pen-side PCR being piloted in Vietnam that saves the transportation time and cost of getting initial diagnostic results, and a smartphone app to collect behavioral and environmental information. Openness to appropriate technologies by program managers is palpable, and several animal health experts noted the absence of animal disease surveillance.

**Recommendation 7.a:** USAID should encourage discussion on how countries can improve electronic reporting on animal health related to zoonosis that is linked with standard human health reporting.

**Recommendation 7.b:** USAID should continue to look for simple, appropriate technological tools to buttress and improve the efficiency of EPT2 and future OH programs.

### **Conclusion 8: Sustainability**

USAID funding for emerging disease threats is finite, and governments in Asia and Africa do not have the resources to support the FETPV or other training, or training-of-trainers. Furthermore, the evaluation team agrees with respondents that OH University Networks and newly formed national OH platforms require continued support and capacity building to become less dependent on USAID.

**Recommendation 8.a:** EPT2 should develop a strategic focus area on sustainability and prioritize the sustainability activities it will support. Strengthening the institutionalization of OH University Networks and national OH platforms should be among the priority options, as should tapping non-EPT2 technical assistance (e.g., from local entities and other USAID projects).

**Recommendation 8.b:** USAID should bolster efforts to pinpoint and disseminate relevant best practices on sustaining OH in collaboration with in-country stakeholders. Dissemination should be broad, and include a wide range of public, private, academic, and donor audiences, including FAO, OIE, and WHO tripartite, with a view to sustaining best practices.

# I. INTRODUCTION

## EVALUATION PURPOSE

This mid-program performance evaluation provides the United States Agency for International Development (USAID) Bureau for Global Health (GH) with an independent assessment of USAID's Emerging Pandemic Threats 2 (EPT2) program (2014-2019) as of October 2017.

The purpose of the evaluation was to identify strengths and challenges in the program, re-evaluate the program's initial priorities in light of the evolving state of science and the work of other partners, and inform the completion of EPT2 and its future iterations. The evaluation comes past the midpoint of the program and approximately a year-and-a-half into EPT2's experience as USAID's implementing program for the U.S. Government's Global Health Security Agenda (GHSA).

## EVALUATION QUESTIONS

This evaluation addressed five questions:

1. What contributions has the EPT2 program made to strengthening cross-sectoral "One Health" (OH) capacities to prevent, detect, and respond to emerging pandemic threats? How is country capacity for this work being sustained?
2. What contributions has the EPT2 program made to the Ebola/GHSA initiatives in Africa beginning with the June 2015 supplemental funding into EPT2? How did this work affect EPT2's capacity to meet the original objectives of the program worldwide?
3. How has EPT2 engaged or coordinated with international organizations, donors, and technical partners to improve OH coordination and to prevent, detect, and respond to emerging pandemic threats?
4. Has EPT2 identified or filled key knowledge gaps to improve the effectiveness of prevention (including risk mitigation), detection, and response to emerging pandemics? If so, what are they? What gaps remain in this field?
5. Is EPT2 on track to meet its objectives (as outlined in the EPT2 Monitoring and Evaluation [M&E] Framework) by the end of the program? If not, which ones are not being met?

A complete copy of the scope of work (SOW) for the evaluation is provided in Annex I.

## II. PROJECT BACKGROUND

Deadly diseases of previously unknown origin have threatened countries around the world in the past several decades, leaving families and communities devastated and, in many poorer countries, challenging already weak public health systems well beyond their capabilities. Avian influenza (AI) H5N1, 2009 pandemic influenza H1N1, Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS), and Ebola—all zoonotic diseases—have caused morbidity and mortality and grabbed international headlines over concern of potential global spread across borders. In each significant instance, the United States responded with compassion, technical and human resources, and financial support. And with each outbreak, action reports pointed to the need for earlier detection, and more timely preparedness and response.

As USAID participated in these responses, it garnered technical expertise and in-country networks across sectors to shift the response from humanitarian efforts to a development imperative. Central to this long-term development response is the importance of coordinating the animal health and human health sectors to work together in detecting and responding to emerging pandemic threats (EPTs) of zoonotic origin through a One Health (OH) approach. EPT2 is designed to be a long-term information and capacity building program to strengthen and improve national and regional capacities to improve prevention, detection, and response to outbreaks of EPTs, most of which are zoonotic diseases, using a OH approach.

### WHAT IS ONE HEALTH?

Central to USAID’s work on EPTs, and thus to this evaluation, is the OH approach to multi-sectoral collaboration. The OH Global Network, whose members include the majority of government and technical organizations, including the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO), explains that:

“[OH] recognizes that the health of humans, animals and ecosystems are interconnected. It involves applying a coordinated, collaborative, multidisciplinary and cross-sectoral approach to address potential or existing risks that originate at the animal-human-ecosystems interface.”<sup>9</sup>

Considerable research and experience have documented that most infectious diseases emerging in human populations are zoonotic in origin, with human infections stemming from human contact with animal reservoirs of these zoonotic pathogens. This understanding provided a larger view of how zoonotic pandemic threats occur, and a greater number of ways in which human disease could be prevented altogether or reduced by engaging the animal health and wildlife conservation sectors to improve detection and disease transmission control in reservoir animal populations. Moreover, this expanded view also included additional opportunities to prevent spillover of pathogens from wildlife into livestock and/or domestic animals and human populations through addressing a variety of “drivers,” such as land-use decisions, deforestation, and habitat destruction.

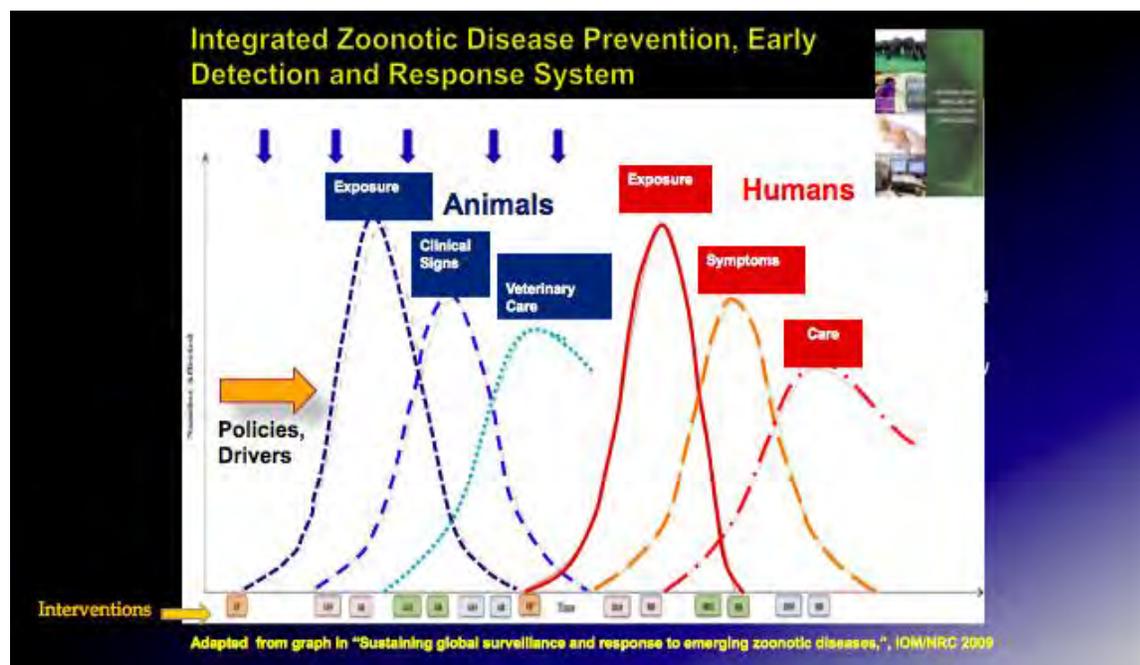
A 2009 report by the U.S. National Research Council (NRC) and Institute of Medicine (IOM), “Sustaining Global Surveillance and Response to Emerging Zoonotic Diseases,” elaborated on this expanded view, and included the graphic shown in Figure I, with examples of interventions described in accompanying text.<sup>10</sup>

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<sup>9</sup> OH Global Network website (<http://www.onehealthglobal.net/>).

<sup>10</sup> NRC/IOM. 2009. Sustaining Global Surveillance and Response to Emerging Zoonotic Diseases. GT Keusch, M. Pappaioanou, M. González, K.A. Scott, and P. Tsai, editors. National Academies Press: Washington DC.

**Figure I. Integrated Zoonotic Disease Prevention, Early Detection, and Response System**



Source: NRC/IOM. 2009. Sustaining Global Surveillance and Response to Emerging Zoonotic Diseases.

## ANTECEDENTS OF EPT2

USAID technical and country experts have advised on zoonotic diseases at the country level for many years, and USAID began its formal, central support for zoonotic diseases in mid-2005 with the AI program, which focused on the control of the highly pathogenic H5N1 avian flu. What followed was a series of focused activities on preparedness and response for the civilian sector and, in partnership with the U.S. Department of Defense (DOD), the military sector in developing countries. These initiatives include the 2007 Pandemic Preparedness Initiative, the 2008 partnerships between USAID and the United States' Pacific Command and Africa Command, and the 2009 PREPARE project to support national civilian and military capabilities in disease prevention and response.

In 2009, following on the NRC/IOM<sup>11</sup> report and other input,<sup>12</sup> USAID launched the five-year, worldwide Emerging Pandemic Threats Program (EPT1) to support "the early detection of new disease threats; enhanced 'national-level' preparedness and response capacities for their effective control; and a reduction in the risk of disease emergence by minimizing those practices and behaviors that trigger the 'spill-over and spread' of new pathogens from animal reservoirs to humans."

EPT1 took a deeper, scientific dive into identifying the sources and pathways for zoonotic disease while strengthening the foundation for workforce and institutional capacity. Its objectives include the following: detect and discover zoonotic diseases at the wildlife-human interface; characterize risks of disease transmission between animals and people; develop risk mitigation strategies; provide pre-service and in-service training; strengthen outbreak response capacity; and strengthen laboratory capacity to safely diagnose and report common human and animal pathogens.

<sup>11</sup> Ibid.

<sup>12</sup> Including "Global Trends in Emerging Infectious Diseases," Jones et al., 2008, *Nature*, 451:990-993.

At the same time EPT1 began, in response to the 2009 H1N1 flu pandemic originating in Mexico, USAID established an EPT-Plus program, which added a component of surveillance and response in livestock, specifically to identify, prevent, and respond to novel influenza viruses in China and Vietnam.

Although EPT1 was not independently evaluated, USAID reports documented improvements in viral discovery, risk characterization, early detection, outbreak responses, and the awareness of and capacities in OH approach response. In the design of the follow-on suite of projects that became EPT2, the following key changes were made based on technical and operational experience:

- FAO was supported to assume a substantial role in developing and sustaining national capabilities in the OH approach, with emphasis on improving the capacity of the animal health sector.
- Viral sampling and investigation under PREDICT was limited to the five viral families that have produced the more serious epidemics in the last decades: paramyxoviruses, coronaviruses, filoviruses, flu or influenza viruses, and flaviviruses.
- Combining biological (i.e., wildlife and human) and behavioral surveillance in one project and focusing this surveillance on specific animal-human interfaces with high spillover risk.
- Maintaining a smaller and more flexible commodity and equipment stockpile.

Additionally, EPT1 began phasing out of the Americas; EPT2 does not have any activities in the region.

## EMERGING PANDEMIC THREATS 2

In 2014, the five-year, \$360 million EPT2 program was launched to serve 35 countries in Africa, Asia, and the Middle East,<sup>13</sup> with the goal to “reduce the risk and impact of EPTs applying a OH approach.” The program comprises a comprehensive suite of three cooperative agreements (CAs) and two grants to public international organizations (PIOs). These partners and their original terms of reference are as follows:

**FAO:** Strengthen national OH platforms and preparedness; develop longitudinal datasets to identify biological drivers of influenza virus evolution, spillover, and spread; promote policies and practices to reduce risk and strengthen global networks for real-time bio-surveillance; and deployment of personal protective equipment (PPE).

**PREDICT 2:** University of California-Davis (UC Davis) (prime contractor), with EcoHealth Alliance, Metabiota, Smithsonian Institution, and Wildlife Conservation Society: Monitor viruses with pandemic potential and behaviors, practices, and conditions associated with viral evolution, spillover, amplification, and spread in human populations; and improve predictive modeling to identify “hot spots” of viral evolution, spillover, amplification, and spread from animal to human populations to support policy change and development of risk reduction strategies. Sampling focused on five viral families: paramyxoviruses, coronaviruses, filoviruses, flu or influenza viruses, and flaviviruses.

**Preparedness and Response Project (P&R):** DAI, Inc. (prime contractor), with Training Resources Group (TRG), Palladium, African Field Epidemiology Network (AFNET), and Fondation Mérieux: Strengthen cross-sectoral capacity for a OH approach in strategic planning for preventing, detecting, and responding to public health/pandemic threats at sub-national, national, and regional levels; promote a

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<sup>13</sup> **Asia:** Bangladesh, India, Indonesia, Vietnam, Thailand, Cambodia, Malaysia, Mongolia, China, Nepal, Myanmar, Laos; **Africa:** Burkina Faso, Cameroon, Côte d'Ivoire, Ethiopia, Guinea, Kenya, Liberia, Mali, Senegal, Sierra Leone, Tanzania, Uganda, Ghana, Democratic Republic of the Congo (DRC), Rwanda, Togo, Nigeria, Niger, Chad; **Middle East:** Egypt, Jordan.

positive policy environment; share information across sectors and among partners; and assess national capacity and harmonize systems.<sup>14</sup>

**OH Workforce (OHW):** University of Minnesota (prime contractor), with Tufts University, Southeast Asia One Health University Network (SEAOHUN), and OH Central and East Africa Network (OHCEA): Define a OH workforce; determine competencies, knowledge, and skills required at different levels to address multi-sectoral disease detection, response, prevention, and control; and strengthen operational capacities of Asian and African university networks to train the current and future OH workforce.<sup>15</sup>

**WHO:** Strengthen real-time human bio-surveillance (WHO/Global Influenza Surveillance and Response System, or GISRS) for key pathogens; support a global database of respiratory pathogens; strengthen national preparedness to respond to events of public health significance (WHO Africa Region, WHO Western Pacific Region, WHO South-East Asia Region, GISRS); support OH national platforms; and invest in OHW development.

The U.S. Centers for Disease Control and Prevention (CDC) was a partner in EPT1; it was also an EPT2 partner but moved into a parallel U.S. Government (USG) role early in implementation, along with the Defense Threat Reduction Agency (DTRA) within the DOD. The World Organization for Animal Health (*Office Internationale des Epizooties* or OIE), a member of a PIO tripartite with FAO and WHO under EPT1, was not included under EPT2.

EPT2 partner activities were originally organized around the following seven strategic focus areas by responsibility. These strategic focus areas were included in the SOWs of the CAs and grants<sup>16</sup> and provided direction when developing global-, regional-, and country-level work plans:

- Developing longitudinal data sets for understanding the biological drivers of viral evolution, spillover, amplification, and spread (FAO, PREDICT 2);
- Understanding the human behaviors and practices that underlie the risk of “evolution, spillover, amplification, and spread” of new viral threats (PREDICT 2);
- Promoting policies and practices that reduce the risk of virus evolution, spillover, amplification, and spread (FAO, P&R);
- Supporting national OH platforms (P&R as lead, WHO, FAO);
- Investing in the OWH (OWH as lead, WHO, FAO);
- Strengthening national preparedness to respond to events of public health significance (WHO, FAO, P&R); and
- Strengthening global networks for real-time bio-surveillance (WHO, FAO).

When this evaluation began in June 2017, FAO was working in 33 countries, PREDICT 2 in 28, P&R in 15, OHW in 13 (and two regions), and WHO had various central grants. EPT2 is centrally funded and managed by the Emerging Threats Division (ETD) in GH’s Office of Infectious Disease. USAID Mission Points of Contact (POCs) are also supported through program funds in many of these countries.

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<sup>14</sup> P&R presently has two objectives: (i) establishing and strengthening national OH platforms and (ii) initiating and supporting the development, testing, and implementation of national preparedness plans for public health events of unknown etiology.

<sup>15</sup> OHW’s specific tasks include support for African and Southeast Asia OH University Networks; assistance to government to train current and future OH workforces; strengthening teaching, research, and outreach capacity; and providing organizational development to the African and Southeast Asia OH networks.

<sup>16</sup> Language shared by CAs and PIOs. Note that changes in responsibilities of partners were made as the program got underway.

### III. EVALUATION METHODS

A three-person multidisciplinary team worked on this evaluation from June 19 to October 4, 2017. Constance A. Carrino, Ph.D., led the team; Daniel R. Lucey, M.D, M.P.H., was the senior emerging infectious disease (EID) specialist, and Marguerite Pappaioanou, D.V.M., P.P.V.M., Ph.D., was the senior OH/veterinary specialist (see Annex VII for summary biographies of each team member).

Elements of the evaluation methodology included:

- Briefings; review of official agreement documents, technical reports and other publications; literature review.
- Issue-specific or in-depth interviews conducted by the team with 194 stakeholders from USAID, partner agencies and organizations, government and university counterparts in EPT2 countries, USG counterparts, and U.S. and international collaborators and experts in OH and research.
- Two web-based surveys, using SurveyMonkey: one of Mission advisors about the program's contributions to GHSA (19 of 32 respondents), and one of EPT2 in-country government and university counterparts on the program's contributions to their country's ability to prevent, detect, and respond to emerging pandemic diseases using a OH approach (42 respondents from nine countries). Respondents in Africa and Asia were represented in both surveys.
- Country visits by two team members to Uganda (July 10-14, 2017) and Vietnam and Thailand (September 5-15, 2017).
- Issue-specific calls to program personnel and country counterparts in four additional countries: EPT2 experience with outbreaks (Cameroon and DRC), disease surveillance (Bangladesh), and sustaining OH networks (Indonesia).

Team members held an initial in-person planning meeting and met virtually on a regular basis throughout the evaluation. They also met in person prior to presenting findings, conclusions, and recommendations to USAID and before drafting this evaluation.

Please see the annexes for further information:

- Annex I contains the Evaluation SOW.
- Annex II describes the methodology and limitations in greater detail.
- Annex III lists the people the team interviewed.
- Annex IV provides the sources the team consulted, including those provided by USAID.
- Annex V contains the survey instruments and the guidelines for the in-depth interviews.
- Annex VI provides signed conflict of interest statements from evaluation team members.
- Annex VII provides summary biographies of the evaluation team members.

## IV. FINDINGS

### CONTEXTUAL PARAMETERS

Before discussing the evaluation questions, we share contextual parameters that the evaluation team heard often in interviews. They are presented first because they are relevant to all five evaluation questions.

1. Developing and strengthening an effective OH approach is a long-term endeavor, requiring a cultural shift within and across sectors. To achieve full success will require providing support and assistance beyond a 10-year time frame.
2. Progress toward a OH approach varies by region (i.e., Asia, Africa) and within region by country, and depends on political commitment, funding, human resources, and institutional capacity. Countries in Asia have confronted highly pandemic avian influenza (HPAI) beginning with H5NI in 2003. They have received assistance and support, including from EPT1 and now EPT2, and are further along in successfully applying a OH approach to strengthen prevention, detection, and response of EPTs. Health leaders in many African countries, aware of the devastation that the 2003 H5NI outbreak caused in Asia, became involved with EPT1 to be better prepared and build capacity for potential outbreaks. West African countries are just starting to engage fully in implementing a OH approach.
3. The human, laboratory, and other resources and capacities of the agricultural sector (i.e., livestock, veterinary medical/science departments) and environmental sector (i.e., wildlife) are extremely weak compared to those of the human health sector (which also lacks resources in many developing and middle-income countries). The livestock health sector is a bit stronger in countries where international livestock trade is a part of the national economy, but again, the animal health sector had fewer resources and capacities, compared to the often under-resourced human health sector.

#### QUESTION 1

*What contributions has the EPT2 program made to strengthening cross-sectoral “One Health” capacities to prevent, detect, and respond to emerging pandemic threats? How is country capacity for this work sustained?*

### EPT2 Contributions to Strengthen OH Capacities

Respondents said EPT2 was strengthening OH capacities by:

- Raising awareness and understanding of the importance of a OH approach;
- Serving as a catalyst to bring government sectors together into a OH approach;
- Strengthening animal health laboratories;
- Strengthening the current and future OH workforce capacity; and
- Promoting cross-sectoral collaboration and country ownership.

EPT2 is credited with raising awareness and understanding of the importance of OH so that health, agriculture, and environment sector leadership and staff have a greater awareness of their complementary and necessary roles, responsibilities, expertise, experience, and resources needed to confront EPTs. The program is seen as a catalyst to bring government sectors together into a OH approach through assistance in establishing OH platforms and strengthening enabling environments.

It is building the capacity of animal health laboratories to collect and test specimens, improve laboratory techniques and protocols, and properly use PPE. EPT2 also provides laboratory equipment and reagents. EPT2 is also strengthening the current and future workforce capacity through in-service training in animal health for government agencies and laboratories and OH University Networks that introduce OH awareness and skills to the next generation of students in public health, veterinary medicine, and related fields. EPT2 promotes cross-sectoral collaboration and country-ownership as it protects national data and assists in improving protocols for OH communication around identifying and announcing outbreaks, and although it does not have a strategic focus on sustainability, EPT2 has demonstrated movement toward country ownership.

**Raising awareness and understanding of the importance of a OH approach:** To paraphrase a USAID respondent, an underlying assumption of EPT2 is that a country's capacity to prevent, detect, and respond to EPTs can be sufficiently strengthened if health, agriculture, and environment sector leadership and staff are aware of what roles, responsibilities, expertise, experience, and resources are needed, as well as the most effective ways for sectors to work together.

USAID respondents commented that EPT2 raised awareness of the importance and value of a OH approach, saying the program demonstrated USAID's importance and unique niche in this area. Respondents from USAID and elsewhere highlighted and underscored that awareness-raising was of immense importance and value to strengthening the prevention, detection, and response to EPTs. They noted that they had observed much progress and that USAID is filling a unique niche in the international assistance community through its awareness-raising activities.

**Serving as a catalyst to bring government sectors together for a OH approach:** EPT2 supported more effective implementation of OH principles and practices in addressing pandemic threats by helping countries to develop and strengthen OH environments and platforms (see Box 1 and Box 4). P&R has strengthened and established OH platforms, including communication channels and meeting venues, where leadership from collaborating sectors can come together for joint planning; providing operational updates; sharing information; and problem solving. As of mid-2016, EPT2 was tracking and/or assisting 11 African and five Southeast Asian countries in their policy development in OH.<sup>17</sup>

The progression to platform and strategy development for these OH entities was different in each country.<sup>18</sup> Success stories include:

- In Kenya, a Zoonotic Disease Unit (ZDU) was launched in 2011 to strengthen and maintain collaboration under a memorandum of understanding between the Ministry of Health; Ministry of Agriculture, Livestock, and Fisheries; and Kenya Wildlife Services. ZDU is now the GHSA coordination point. P&R is assisting the ZDU with the development of terms of reference to transform the platform into a OH Technical Committee, with a wider mandate incorporating zoonotic diseases, anti-microbial resistance, food safety, and environmental health as thematic areas.
- In Bangladesh, One Health Bangladesh (OHB), a community of practice, was established in 2008 (prior to EPT1) with the intent of mobilizing stakeholders to address the threats of emerging and re-emerging infectious and zoonotic diseases. With P&R support, OHB has evolved and developed a strategic framework that was approved by the government in 2016. Subsequently, P&R supported the platform in developing a resource planning and advocacy strategy, and a budget line item dedicated to OH was added to the health budget.

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<sup>17</sup> P&R: at-a-glance status of national OH platforms, September 2016.

<sup>18</sup> See the following sites for examples of P&R work in raising OH at the country level: [preparednessandresponse.org](http://preparednessandresponse.org), publications ([preparednessandresponse.org/publications/](http://preparednessandresponse.org/publications/)), and news ([preparednessandresponse.org/news-highlights/](http://preparednessandresponse.org/news-highlights/)).

- In Vietnam, the One Health Partnership (OHP) began with World Bank support to coordinate AI assistance. This has developed into a OH coordinating entity supported by EPT1 and EPT2 (under a United Nations Development Program grant) and the government. OHP has 27 members from ministries and the bilateral and international donor communities and operates under the authority of a government circular and a multi-year work plan.

As these examples illustrate, EPT2 did not take a “cookie-cutter” approach; instead, whenever possible, it drew on historical in-country experience in OH coordination. In-country stakeholders noted these characteristics. During field visits, government and university stakeholders described the development of their OH platforms as extensions of earlier disease-specific outbreak coordination (e.g., AI in Vietnam and brucellosis in Uganda), but said the platforms now have expanded responsibility over zoonotic threats and are more permanent. USAID respondents noted that Guinea, Liberia, and Sierra Leone—the West African countries most affected by the recent Ebola outbreak and which do not have a history of multi-sectoral coordination in zoonotic disease—moved swiftly toward cross-sectoral coordination by setting up Emergency Operations Centers and a multi-sectoral technical committee to coordinate government inputs into the development of the GHSA Roadmap. Reporting indicates that platforms such as those in Uganda and Vietnam have strengthened cross-sectoral collaboration and coordination during outbreaks. And, in Indonesia, EPT2’s assistance for OH government-wide engagement demonstrates the many phases this type of policy engagement may take over time (see Box 1).

#### **Box 1: OH Policy Coordination in Indonesia**

Indonesia’s *KOMNAS Zoonosis*, the National Commission on Zoonosis, comprises multiple ministries. It predated EPT2 and provides an example of how the program helps build on and sustain OH coordination in government.

EPT2 is working closely with Government of Indonesia stakeholders to ensure that inter-ministerial coordination continues. In 2015, a general Presidential Directive aimed at ridding government of special commissions called for *KOMNAS Zoonosis* to be disbanded by December 2017. EPT2 and its partners are working to integrate *KOMNAS Zoonosis* and OH into a “supra-ministry,” the Coordinating Ministry of Human Development and Culture, and into local-level operations. The goal is to assure sustainability and funding.

OH is accepted as an approach in five ministries: Health, Agriculture, Forestry, Home Affairs, and National Emergency. Indonesia’s 2015-2019 National Plan has eight areas of focus, one of which is OH coordination, supported by EPT2. It also includes priority zoonotic diseases, such as AI and rabies. Indonesia’s OH University Network recently became an independent entity and can now apply for its own funding. EPT2 partners assist the government under the current National Plan and are helping develop the next one.

*Source: From a discussion led by USAID with in-country stakeholders and ETD input. EPT2 is also assisting Indonesia with HPAI endemicity studies to better understand why AI viruses are circulating and changing in the country.*

Although progress on adoption of a OH approach to outbreak response was reported, especially in an environment where there is an immediate threat, several of our key informants suggested that more attention be given to what the OH platforms could focus on between outbreaks/outside of emergencies. Working on this issue was considered critical to getting greater buy-in from leadership in multiple sectors, preventing emergencies, and being prepared when the next emergency arises.

Several respondents, including donors and EPT2 in-country POCs, described significant challenges to achieving successful OH platforms. Examples of what made this type of collaboration difficult include:

- Different levels of resources/human resources in the human health and animal health sectors, as well as different educational and cultural backgrounds;
- Concerns by human health leadership that international health resources were moving (i.e., “being diverted”) to the animal health sector, creating a dynamic of competition rather than collaboration;

- Human health leadership not fully engaged in OH collaboration and senior animal health officials not at the table when collaborative meetings did occur; and
- In-country respondents noted that EPT2 had attracted high-level policy advisors to assist countries. During field visits, government respondents were pleased with the caliber of in-country teams supported by P&R (in Vietnam, the United Nations Development Program supported the OH Program.) A few respondents said governments would be more receptive to policy development assistance if USAID or international organizations (e.g., FAO, WHO) provided it directly, instead of it coming from a non-governmental organization.

**Strengthening animal health laboratories:** A major focus of EPT2 support for laboratory strengthening has been surveillance for priority emerging pathogens of zoonotic origin in wildlife. EPT2 is building capacity, via FAO and PREDICT 2, of country animal health laboratories to collect and test specimens and providing training in laboratory techniques and protocols (see Box 2) and the correct donning and wearing of PPE. It also provides laboratory equipment and reagents. During outbreaks, EPT2 advises on OH collaboration, including multi-sectoral communication protocols.

This support has resulted in strengthened capacity in some EPT2 countries to collect and test specimens and to facilitate early identification and diagnosis of pathogens causing EPT priority diseases.

#### **Box 2: FAO’s Laboratory Mapping Tool**

Using a picture of laboratory functions in a region, FAO’s Laboratory Mapping Tool (LMT) is used in collaboration with in-country counterparts to determine gaps in laboratory functionality and then develop plans and targets for filling those gaps. It can also be used to prioritize procurements. Interviews indicated that a significant number of EPT2-supported labs are using the LMT and that it is regarded as a viable way to shorten the timeline between detection and response to EPT and other zoonotic pathogens in veterinary laboratories, including across borders. An FAO respondent explained that the LMT was developed under EPT1 and piloted in South Asia, Southeast Asia, and Africa in 26 laboratories in 22 countries.

FAO has trained many LMT national focal points in Asia, as well as central and peripheral labs’ LMT focal points in Thailand. Under EPT2, a regional training event is planned for Africa. To date, 61 LMT core assessments have been conducted in 50 veterinary laboratories in 23 EPT2 countries receiving FAO assistance.

*Source: Personal communication from FAO. EMPRESS: Transboundary Animal Disease Bulletin, No.40-2012.*

Respondents noted that more work and effort was needed to promote the harmonization or adoption of protocols PREDICT 2 and FAO had developed for animal health laboratories. An ETD respondent explained that “[I]n general, PREDICT is screening for viral families and FAO is screening for specific pathogens, which makes harmonization of protocols difficult.” An FAO leader noted that “PREDICT protocols for five viral families are built into laboratory capacity building.”

EPT2 supports capacity strengthening in ministry and university labs for both animal health and emerging spillover events. Survey interview respondents from government and academia said this assistance did make contributions, as the following comments illustrate:

“WHO support for laboratory enhancement at the National Center for Laboratory and Epidemiology including biosafety and biosecurity, procurement of reagent[s] and equipment for influenza and dengue detection, and dengue virology surveillance network. EPT[2] supports multiple lab efforts for normative diseases (animal health) and emerging spillover events, ministry labs, and universities.”

— *Government respondent, Laos*

“PREDICT 2 supporting set-up of mobile labs in DRC.”

—*Government respondent, DRC*

“EPT2 assessed the National Veterinary Lab, LANAVET ... on the capacity of storage of samples and cold chain maintenance. And PREDICT 2 [is] providing infrastructure and building capacity of personnel at CRESAR [Military Health Research Centre] to ensure adequate disease surveillance and detection.”

—Government respondent, Cameroon

As ETD and other USAID respondents looked at programs, they brought up additional advice and observations. For example:

- Concerning EPT2 and animal labs, an ETD respondent said, “...marry them up with other international partners with research capacities, e.g., Canadian International Development Research Centre was investing in SEAOHUN until budget was slashed.”
- Another ETD respondent remarked, “In West Africa EPT2 is not the primary supporter of laboratory capacity building but does provide training and supplies. FAO is conducting assessments and identifying gaps in Africa.”
- A USAID respondent said, “[A g]ood example of capacity building in Ghana is PREDICT work with animal testing labs in support of the Ministry of Agriculture.”

Box 3 describes how, with EPT2 support, livestock surveillance for AI strengthened OH capacity in Bangladesh.

### **Box 3. AI Surveillance in Bangladesh**

Bangladesh’s experience with AI surveillance demonstrates unique ways to strengthen a OH approach, from the bird markets in Dhaka, Chittagong, and elsewhere for AIs (e.g., H5N1, H9N2, and newer strains). Recently, government surveillance and antimicrobial resistance (AMR) programs began collaborating, with officials simultaneously looking for AI and AMR in the communities. Since the collaboration began, H5N1 was found in higher levels in markets than predicted.

What Bangladesh officials call the “OH approach for AMR” has been synergistic with the OH approach for AI; together, the two have stimulated the government to adopt a OH approach across the ministries responsible for human health, livestock, and the environment. In 2017, a line item for OH was added to the Ministry of Health and Welfare’s budget.

The country’s risk-based AI surveillance suggests that H5N1 AI is endemic in poultry, and the multi-sectoral, national OH secretariat is currently developing a long-term strategy. Surprisingly, there have been very few human H5N1 infections reported. One theory is that the H5N1 virus receptor is not present in the respiratory tract of Bangladeshis. It is interesting to note, however, that clinicians cannot submit samples from symptomatic patients for H5N1 testing. Instead, the Ministry of Health must send a team to obtain a specimen to test patients. As a result, fewer patients are going to be tested, and it is possible that H5N1 cases will be missed.

*Source: In-country stakeholder discussion led by FAO representative.*

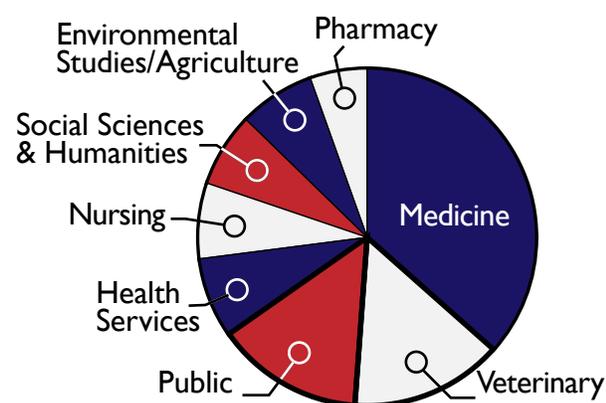
Laboratory strengthening, which most respondents considered essential, was described as a long-term investment that may or may not be sustained. For example, laboratory capacity achieved during EPT1 in Indonesia and Thailand has been sustained during EPT2, but capacity in Uganda, strengthened under EPT1, declined between EPT1 closeout and EPT2 start-up, and requires further strengthening. Respondents who commented on strengthening laboratory capacity in Uganda and similar settings noted that—aside from training, equipping, and assisting with laboratory protocol—important factors for developing a laboratory include continued contact with animal lab experts, sufficient workload to practice procedure, and identifying recurrent supply.

**Strengthening the current and future OH workforce capacity:** On the pre-service side, EPT2 supports two regional university networks, OHCEA and SEAOHUN, launched in EPT1 under the

RESPOND project, to develop a workforce open to and capable of implementing OH approaches to prevention, detection, and response to EPTs. Each is made up of university networks or members that have multiple departments representing sectoral elements in a OH approach. OHW respondents explain that the OHCEA Secretariat in Kampala, Uganda, which works across the region, was established when the OHCEA network was established. The SEAOHUN Secretariat in Chiang Mai, Thailand took more time to establish and was restructured in EPT2. During this time, country-level university networks were established in Indonesia, Malaysia, Thailand, and Vietnam. OHCEA functions as a regional training center and SEAOHUN has more of a regional coordination role.

As of Year 3 of EPT2, OHCEA comprised a network of 14 member universities, including 21 schools/faculties of public health, veterinary health, and medicine, across eight Eastern, Central, and West African countries. SEAOHUN comprised four national OH University Networks (OHUNs) in Indonesia, Malaysia, Thailand, and Vietnam, for a total of 62 universities, including 115 schools/faculties of public health, medicine, agriculture, livestock, wildlife, and environment. Figure 2 shows the schools and faculties in OHCEA and SEAOHUN.

**Figure 2. Schools/Faculties in OHCEA and SEAOHUN**



Source: June 2017 ETD briefing, p. 14, from OHW Year 3 Semi-annual Report.

OHUN activities include:<sup>19</sup>

- Multi-sectoral engagement in workforce planning and assessment, OH partnerships and advocacy, and community outreach;
- Education and training, and the development of OH educational materials supporting competency, in-service training, and pre-service training; and
- Institutional strengthening through support for faculty and curricula development, new degree and certificate programs (e.g., a Master’s degree program in Vietnam), OH Student Clubs, and community demonstration sites.

Many respondents, including host-government officials, view EPT2’s support for university networks<sup>20</sup> as contributing to the cultural shift required for countries to develop a OH approach. For example, a government survey respondent said, “The quality of the workforce has been improved. Students have been trained on different aspects around GHSA, such as AMR, biosafety and biosecurity, HPAI, etc.” Another said there were “many trainings of the actors and capacity building in the concept of one health.” USG partners commented that the “culture of the OHCEA integrating veterinary schools [was]

<sup>19</sup> See the following link for OHW publications and descriptions of tools: <https://www.vetmed.umn.edu/centers-programs/global-one-health-initiative/one-health-workforce/one-health-workforce-publications>.

<sup>20</sup> This feedback, in turn, refers to OHW as a whole, though the university networks are the face of the project in the field.

important” and that the OHUNs were the “best part of EPT2 for developing OH champions, and a workforce that understands.” Furthermore, respondents from CDC, DTRA, PREDICT 2, and P&R report providing training to OHUNs at the country level.

The evaluation team found that governmental units responsible for preventing, detecting, and responding to EPTs have made progress in defining their workforce needs in terms of technical knowledge and skills. In Thailand, the OHUN found that “soft skills” in management, leadership, communication, and teamwork in the field were also very important to government employers. Moreover, improved dialogue reported between the universities and government sectors have enabled OH programming and training—both in-service and pre-service—to more effectively matriculate graduates with the desired OH knowledge, skills, and competencies needed for a strengthened OH approach.

More generally, the team heard consistent enthusiasm in Asia and Africa for the FAO-supported Field Epidemiology Training Program for Veterinarians (FETPV) as an important contribution to strengthening a OH approach to EPT prevention, detection, and response in the current workforce. Respondents said the FETPV needs to be initiated, continued, or expanded.

**Promoting cross-sectoral collaboration and country ownership:** Several government respondents, including some who did not work directly with EPT2, said that the program’s contribution was that it worked well with government and did not come with its own agenda or “cookie-cutter” programs. Respondents noted EPT2 provided resources and capacity building in the agricultural sector (i.e., livestock, veterinary medical/science) for disease surveillance, prevention, and control, where capacity is the weakest and most needed for a OH approach. An ETD respondent noted that EPT2 supported veterinary scholarships aimed at increasing the number of veterinarians trained, even when there were not many veterinarians—or none at all, as in West Africa—working in public health.

On the research side, PREDICT 2 established a cross-sectoral communication protocol that respects country ownership of data and, as observers noted, promoted the value of partner sectors. PREDICT’s data protocols require sign-offs by health, livestock, and wildlife health sectors before communicating alerts, status reports, public communications, publications, and/or sharing of information to a wider set of stakeholders, including other national and international human and animal health authorities and communities. While this process can take time, respondents noted this approach bolstered OH practices and ensured country ownership.<sup>21</sup>

### **Are EPT2 Contributions Being Sustained?**

Although EPT2 does not formally define “sustainability” or focus on it strategically, it is taking steps to ensure countries are able to sustain efforts after closeout. In general, program countries have improved their capability to manage events. Respondents said EPT2 was taking the following steps to ensure sustainability and eliminate constraints:

- Moving to local expertise;
- In-country testing;
- Pathogens surveillance in wildlife;
- Linking universities with government; and
- Country buy-in.

**Moving to local expertise:** EPT2’s implementing partners are hiring local and regional representatives as project staff. Asian countries in particular are seeing fewer international consultants compared to the

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<sup>21</sup> Some USAID in-country staff said this process was precluding them from obtaining useful information, noting that they were USG employees and would keep information confidential.

number of regional and national staff directing and managing their project activities. Projects in African countries, much newer in establishing OH platforms and multi-sectoral collaboration, are relying on international consultants to a greater degree, but, with additional time and progress, are expected to follow the positive trend being observed in Asia.

**In-country testing:** Observers note that as laboratory capacity is strengthened, testing of specimens is occurring in-country or within the region, rather than in laboratories outside the country. This is seen as an important contribution to shortening the time for identification and confirmation of EPT priority pathogens and others causing outbreaks. ETD respondents noted that in-country testing was now generally the rule, with external testing done only in a few countries. In cases where in-country testing is not a feasible/efficient use of resources, efforts are made to set up systems for utilizing resources within the region. In the longer term, particularly in resource-poor countries, USAID respondents, EPT2 partners, and other USG partners noted a need to identify countries' diagnostic capability day-to-day—and then what will be needed over and above that for diagnostics at higher levels.

**Pathogens surveillance in wildlife:** On the surveillance side, respondents noted observations and raised questions about the importance of sustaining EPT priority pathogens in wildlife surveillance and how to go about it. Several respondents familiar with EPT priority pathogens in wildlife surveillance in Thailand, Vietnam, and EPT2-wide noted the large human resource capability, technical expertise, and special equipment required for collecting specimens. An ETD respondent explained that it was “not expected that a country sustain the type or intensity of wildlife surveillance.” Yet many of these same respondents and others deem the collection of wildlife data necessary and important for the international community to continue improving the quality of predictive models in this area.

Several respondents noted that international agencies, other USG partners, and government respondents or organizations will most likely need to bear the costs after EPT2 ends. Several respondents noted that USAID should consider a more focused and strategic approach to conducting surveillance of EPTs in wildlife in fewer countries and perhaps through regional hubs.<sup>22</sup>

**Linking universities with government:** The OHUNs are more frequently tailoring their training to government workforce needs (e.g., the OHUN in Thailand mentioned above). As the government begins to see country and regional universities address its workforce needs—knowledge, skills, competencies—increased and sustained governmental support of university education and training in the area of OH/EPT can be anticipated.

Respondents familiar with the OHUNs, including members, noted that further work is needed to identify the value added for individual universities to join and serve as active members of a network, and to find creative and innovative opportunities to sustainably fund network activities. Other suggestions for institutionalizing OHW training included continuing support to the FETPV and support for creating jobs for OHW graduates and alumni.

For OHCEA and SEA OHUN, an ETD team member noted that, along with their objectives of standardization and South-South exchange, the regional university networks provide a regional identity and platform in which other donors and agencies will want to invest. Respondents noted that OHW was providing regional and country OHUNs with organizational development activities through the regional networks to support the diversification of funding streams, including through government sources. University respondents to the survey and during interviews said they needed assistance in organizational development and diversifying their funding base, and other in-country respondents noted the need for organizational development.

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<sup>22</sup> <https://www.ghsagenda.org/about>.

OHCEA is helping orient new universities and faculties to the university network program and working with members to better disseminate their work based on the niches they fill in their respective countries. - Respondents familiar with the regional network see the regionally-based help to OHUNs, especially new ones, as important for the strength of the approach.

Within the Ugandan university network, faculty expressed concern about not having enough funds to expand the length and reach of their program. For example, while proud of having some of their students involved in response to an avian flu outbreak in early 2017,<sup>23</sup> faculty noted they lacked funding for applied training in outbreak procedures, such as teaching more students how to properly put on and remove PPEs.

In Asia, OHUNs in Thailand and Vietnam reported receiving capacity building assistance from OHW, and member university representatives shared publications that outlined membership and accomplishments of the OHUNs. In interviews, respondents working with or observing the work of the OHUNs in Thailand and Vietnam, as well as SEAOHUN, suggested that the value added by the regional network should be more fully explored. To various degrees, these responses referenced the strength and complexity of some of the existing OHUNs, current leadership, and staffing challenges at SEAOHUN, and the coordination and standardization roles of WHO and OIE in the region.

**Country buy-in:** Greater country buy-in for instituting a robust OH approach, a requisite for sustainability, is anticipated by allowing countries to address endemic zoonotic diseases of high priority and OH importance to them, as is now being done through the incorporation of GHSA.

There is consensus that OH platforms should be formally incorporated into government as an essential step toward their sustainability. Countries have formalized entities in annual plans or administratively; however, their financing remains a challenge. Bangladesh has established a OH platform budget element in its state health budget (see Box 3), and many respondents working in Asia and Africa cited this example and felt government budgetary support for OH was a viable path for sustaining the approach. In Uganda, several respondents proposed instituting matching funding support on a graduated path where donor resources would decrease over time. Yet when asked about budgetary support, one regional observer said, “For one middle-income country, passive government ownership is a concern, as is the perceived donor-driven nature of GHSA, combined with low levels of financial and human resources on the part of governments.”

## QUESTION 2

*What contributions has the EPT2 program made to the Ebola/GHSA initiatives in Africa beginning with the June 2015 supplemental funding into EPT2? How did this work affect EPT2’s capacity to meet the original objectives of the program worldwide?*

The GHSA, launched in February 2014, is a multi-country collaboration aimed at “facilitating collaborative, capacity-building efforts to achieve specific and measurable targets around biological threats, while accelerating achievement of the core capacities required by WHO’s International Health Regulations, the World Organization of Animal Health’s (OIE) Performance of Veterinary Services Pathway, and other relevant global health security frameworks.” GHSA acknowledges the essential need for a multilateral and multi-sectoral approach to strengthen global and individual countries’ capacity to prevent, detect, and respond to infectious diseases threats, whether naturally occurring, deliberate, or accidental. Once established, such capacity would mitigate the devastating effects of Ebola, MERS, other

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<sup>24</sup> APs include the following: for prevention: AMR, zoonotic disease, biosafety and biosecurity, and immunization; for detection: national laboratory systems, real-time surveillance, reporting, and workforce development; and for response: Emergency Operations Centers, linking public health with law and multi-sectoral rapid response and medical countermeasures, and personnel deployment.

highly pathogenic infectious diseases, and bioterrorism events. Today, GHSA includes 59 nations and multiple advisory partners, including WHO, OIE, FAO, Interpol, the European Union, the Economic Community of West African States, and the United Nations Office for Disaster Risk Reduction. It is implementing 11 Action Packages (APs)<sup>24</sup> and uses WHO's Joint External Evaluations (JEE) to measure capacities and evaluate progress. After GHSA started, Phase I countries received technical assistance to develop five-year strategic roadmaps (usually in collaboration with host governments). USG continues to develop annual work plans to coordinate efforts. In a majority of cases, the JEEs were done much later and the roadmaps were not updated.

The National Security Council (NSC) coordinates USG participation in GHSA. CDC, USAID, and DTRA are the primary USG technical implementers. EPT2 received Ebola emergency supplemental funding to work as USAID's contribution to GHSA in a majority of its Phase I countries in Africa,<sup>25</sup> including West African countries affected by Ebola. This new initiative required a new set of budget allocation and reporting constructs, as well as new design and reporting for country work plans, as described in greater detail in the following sections.

### Key EPT2 Contributions to GHSA

EPT2 made important contributions to GHSA. Its global leadership, and that of predecessor USAID programs, are credited with providing the conceptual framework for GHSA and relevant activities to work on the prevention, detection, and response to zoonotic disease threats using a OH framework. EPT2 also spearheaded key multi-year, multi-country activities, such as the Ebola Host Project and Africa Sustainable Livestock 2050 (ASL2050), which contributes to GHSA's knowledge base for the near future.

**USAID global leadership contributions to GHSA:** In testimony before a subcommittee of the Senate Committee on Foreign Relations on June 20, 2017, on the topic of "The World Health Organization and Pandemic Protection in a Globalized World," the then-Special Advisor to the UN Secretary-General said:

"The U.S. Government has played a major role in infectious disease prevention and control through the work of different government departments, through the CDC and [the National Institutes of Health], through research undertaken by universities and private enterprises, through participation in [WHO's Global Outbreak Alert and Response Network] and through consistent contributions to the WHO and other parts of the UN system, as well as the international financial institutions, [the Vaccine Alliance] and similar alliances. **Much of this work has been made possible through one highly strategic support mechanism—the USAID Emerging Pandemic Threats program, that has been consistently supported by Congress over the last 12 years and implemented in concert with the WHO.** [GH Pro emphasis.] It has led to the transformation of WHO's work on threat management and response by ensuring that surveillance systems, laboratory services, and human capabilities are properly aligned with the

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<sup>24</sup> APs include the following: for prevention: AMR, zoonotic disease, biosafety and biosecurity, and immunization; for detection: national laboratory systems, real-time surveillance, reporting, and workforce development; and for response: Emergency Operations Centers, linking public health with law and multi-sectoral rapid response and medical countermeasures, and personnel deployment.

<sup>25</sup> The GHSA Phase I countries are Bangladesh, Burkina Faso, Cameroon, Côte d'Ivoire, Guinea, Ethiopia, India, Indonesia, Kenya, Liberia, Mali, Pakistan, Senegal, Sierra Leone, Tanzania, Uganda, and Vietnam.

analyses of the kinds of threats to be anticipated; this, in turn, improves the predictive capabilities of our collective preparedness and response efforts.”<sup>26</sup>

More specifically, respondents familiar with the early design process for GHSA noted that ETD leadership advocated strongly and successfully for the overarching principles and approach for GHSA (e.g., the “prevent, detect, and respond” guiding principles, adoption of the OH approach, and the establishment of an AP on zoonoses).

In parallel, within the USG, proceedings of a recent meeting on the National Biodefense Strategy noted that: “Efforts like GHSA and the One Health Initiative recognize how connected animal and human health are and how emerging and re-emerging infectious diseases often arise overseas and can easily be imported by trade or travel. Much of the work of GHSA is centered at CDC and USAID.”<sup>27</sup>

**EPT2 Contributions to Ebola/GHSA prevention, detection, and response:** EPT2 is making contributions to prevention, detection, and response under the GHSA APs. USAID EPT and GHSA field POCs indicated they had worked in 10 of the 11 APs<sup>28</sup> and 24 of 31 GHSA countries.

The GHSA Annual Report has examples of USG contributions, several of which EPT2 was involved in, including problem solving in Cameroon (see Box 4) and DRC outbreaks (see Box 5).<sup>29</sup>

#### **Box 4. H5N1 and Monkeypox in Cameroon**

EPT2 contributed to early detection and outbreak response in two outbreaks in Cameroon (H5N1 AI and monkeypox) using a multi-sectoral approach. Of note, no humans were found to be infected with either virus, so the EPT2 paradigm “prevented” human infections by early detection and response to the animal outbreaks.

The August 2016 H5N1 AI outbreak was the first to be identified inside Cameroon since 2006. Sick poultry was found on a large farm near Yaoundé; initial laboratory diagnostic testing and coordination occurred among the Cameroon National Veterinary Laboratory, the Pasteur Institute, and the laboratory supported by PREDICT 2. Outbreaks occurred on other farms, and more than 30,000 birds were found affected. Support from FAO and World Bank contributed to the rapid response. An Emergency Operations Center was immediately activated and surveillance for human cases began quickly.

After a hesitant start by the agriculture sector, an effective joint communications effort was begun that included the ministries of health, agriculture, and communication under the National OH Committee (a OH platform). Chicken is a staple food in Cameroon, and messages were developed for farmers, live bird markets, and the general community, and police were tapped to assist the effort.

CDC and DTRA provided PPE; however, demand exceeded supply on the first day, highlighting the importance of having an ample stockpile of PPE. Protocols for training on how to properly don and remove PPE also had to be put in place. Oral antiviral prophylaxis was not immediately available because the expiration date had passed, emphasizing the need for rapid access to this drug.

The monkeypox outbreak also occurred in 2016. Three or four chimpanzees in a sanctuary became ill; one died and a necropsy was performed. The PREDICT 2-supported laboratory helped identify the virus. The outbreak was reported to OIE, and the Ministry of Wildlife and the Ministry of Agriculture/Livestock collected samples, including from human animal workers and family members, rodents, and other animals in the sanctuary. The Emergency Operations Center was initialized and no human cases were found. Again, there were not enough PPEs, but USG collaborators eventually filled the gaps.

*Source: In-country stakeholder discussion led by USAID.*

<sup>26</sup> Nabarro, David. Testimony before the U.S. Senate Committee on Foreign Relations on “The World Health Organization and Pandemic Protection in a Globalized World,” p. 17.

<sup>27</sup> U.S. National Biodefense Strategy Stakeholders Meeting, Washington, D.C. June 22, 2017, p. 3.

<sup>28</sup> They had not worked on the human immunization AP.

<sup>29</sup> “Advancing the GHSA: Progress and Early Impact from U.S. Investments” Global Health Security Agenda Annual Report. (not dated), p. 12.

One example of USAID's—and EPT2's—role highlights the OHUN program in Uganda, again related to assistance during an outbreak:

Uganda (zoonotic diseases). Multi-disciplinary teams of students are building practical skills in infectious disease management and control with support from the USAID-funded OH Workforce Project and the OH Central and Eastern Africa University Networks. At the request of the Ministry of Health, six OH Student Club members from Makerere University joined a rapid response team investigating a Rift Valley Fever outbreak in the Kabale District. The participating OH students improved their practical skills in disease investigation and response through this and other community service programs. In all, OH Student Clubs are active in public health or veterinary university campuses in seven African countries. Through these clubs, more than 1,000 students from a variety of health backgrounds have participated in outreach activities and health trainings.

### **Box 5. Yellow Fever in DRC**

Early in 2016, Angola experienced large and unanticipated yellow fever (YF) epidemics, followed by DRC.

The initial response in DRC was challenging. For four weeks in July, the DRC national reference laboratory in Kinshasa ran out of reagents to perform the diagnostic YF antibody test. EPT2 provided tests and the lab then performed YF diagnostic tests for DRC and, during this epidemic, for neighboring Republic of Congo.

Without knowing where patients with YF were located in Kinshasa or across the Congo River in Brazzaville, the need for vaccination was uncertain. In addition, an insufficient global vaccine supply meant most people could not get a full dose. ETD was also concerned that if these primarily urban epidemics were not controlled, YF could pass into China, which had no history of YF and thus no immunization, via the many Chinese guest workers in DRC and neighboring counties. China reported 11 cases of YF in workers who had returned from Angola, but fortunately the virus did not spread locally.

In Kinshasa from August 15-27, 2016, for the first time in history, a fractional-dose (20 percent) of YF vaccine was given during a mass vaccination campaign to stop an epidemic. EPT2 provided support for a mass vaccination campaign that occurred in the last two weeks of August 2016 to vaccinate 7.5 million people, and supported a longitudinal study of people receiving the one-fifth “fractional dose” to measure antibody levels one year out and longer. These data will help determine when the 7.5 million people need to be revaccinated and, thus, when the one-fifth fractional dose is required in the future.

*Sources: WHO, August 30, 2016, YF update and funding request; GHSA Annual Report, page 13.*

A field survey conducted under this evaluation of EPT2 and GHSA POCs (n=19) shared specific examples of how EPT2 work contributed to GHSA in their countries. Together, the contributions reported by respondents demonstrate the broad involvement and relevancy of EPT2 to GHSA. Examples of EPT2 contributions to their countries from host-government officials and academia include:

- **For prevention.** Active participation and P&R assistance with convening [One Health Zoonotic Disease prioritization meetings]<sup>30</sup> (several similar responses); PREDICT 2's work globally to inventory and map priority diseases with the benefit stream beginning years earlier; increased sharing of local and global knowledge of OH and P&R assistance to operationalize OH [platforms]<sup>31</sup> and strategies (several similar responses); establishment of FAO Emergency Centre for Transboundary Diseases teams in Africa; FAO assistance for AMR activities in Africa; FAO

<sup>30</sup> Wording for these meetings differed, however; the official name of the workshop was “One Health Zoonotic Disease prioritization.” The workshops use the CDC-developed standardized tool to help countries rank their top priority zoonotic pathogens, including emerging and endemic diseases.

<sup>31</sup> “OH networks” is sometimes used by in-country stakeholders to refer to OH platforms, as it was in this quote.

training in biosecurity and quality assurance, including on the use of the National Veterinary Laboratory in Cameroon (LANAVET) FAO LMT assessment; and PREDICT 2 training in biosecurity.

- **For detection.** WHO support for laboratory enhancement, including equipment and reagents; FAO assessment of veterinary laboratory using LANAVET for capacity of sample storage and cold chain maintenance; use of the Military Health Research Centre (CRESAR) laboratory facilities to ensure adequate disease surveillance and detection; PREDICT 2 assistance to institute mobile labs; pre-service training through university networks (several similar responses); and start-up of FAO training in Africa.
- **For response:** Development of preparedness strategy for public health events of initially unknown etiology (P&R); building government capacity to identify a potential Public Health Emergency of International Concern and file a report to WHO and/or OIE based on an exercise or real event; preparedness planning (several similar responses); and simulation exercise.

In interviews it was clear that EPT2 partners saw themselves as integral contributors to GHSA. The most common refrain when interviewing and surveying Mission advisors in the field was that EPT2 was equated with GHSA. Others saw EPT2 accomplishments as directly related to the implementation and success of GHSA. Yet, USAID interviewees at headquarters were careful to explain that EPT2 had long-term objectives while GHSA's were more medium-term. One Mission advisor responding to the survey provided the following explanation of this disconnect:

*The Zoonotic Disease Action Package was designed as the foundation of upstream prevention of emerging infectious disease threats from animal sources.... The JEE is missing/excluding indicators for true prevention. While the EPT2 program aligns very clearly with the objective and foundational principles of the GHSA, due to JEE warping/shifting the intent of the GHSA, the critical upstream activities to preventing emerging zoonotic pandemics are no longer emphasized by GHSA. Therefore, the EPT2 program provides a critical complement to GHSA through activities that, (1) build global and local capacities to map and understand the pathogens circulating at the human, animal, environment interface, and (2) build global and local understanding of the risk of zoonotic disease spillover, as well as the human activities and behaviors that drive and limit spillover.*

**Key multi-year activities contributing to GHSA:** The Ebola Host Project is a multi-year effort to identify a range of animal hosts for Ebola viruses that serve as a source of human infections, as well as the behaviors and conditions associated with increased likelihood of another outbreak in the three Ebola-affected countries of West Africa—Sierra Leone, Liberia, and Guinea. The project is identifying a range of animal hosts (i.e., wildlife, livestock, and domestic animals) of Ebola viruses that could be a source of human infections and identifying the behaviors and conditions that may lead to another outbreak. In parallel, the project is strengthening capacities for surveillance and laboratory diagnostics, to serve as a platform for broadening countries' capacity to prevent, detect, and respond to a range of emerging infectious diseases.<sup>32</sup>

Respondents familiar with the Ebola Host Project noted several challenges faced during implementation:

- Rapid start-up to find and test more than 50,000 animals without time for in-country capacity building.
- Low country capacity. For example, samples were taken out of West Africa to study in university laboratories in the United States (e.g., UC Davis, Columbia University), and possibly one or more samples were sent to the CDC in Atlanta.

<sup>32</sup> <https://www.usaid.gov/ebola/global-health-security-agenda> (updated Jan. 31, 2017) and PREDICT 2 Semi-annual Report 2017.

- Requirement that the government must approve the release of any major findings, such as if a live Ebola virus was found in wildlife (e.g., bats or primates), in livestock (e.g., goats), or in domestic animals (e.g., dogs).<sup>33</sup>
- Protocols not optimally coordinated to test samples from wildlife, domestic animals, and livestock.
- Budget realignments that led to re-evaluation of animal and behavioral surveillance. Also, behavioral studies to identify risk factors and risk mitigation measures have not begun.<sup>34</sup>

Another EPT2 contribution particularly relevant to the multi-sectoral involvement envisioned by GHSA is ASL2050, which uses lessons learned from the past 35 years in Asia and anticipates that similar events will happen in Africa between 2015-2050 with regard to rising demand for livestock as sources of zoonotic pathogens presenting risks for public health and the environment. Launched in 2017 to include six countries (Uganda, Burkina Faso, Egypt, Ethiopia, Kenya, and Nigeria), high-level national, multi-sectoral steering committees with oversight activities were established in each country to catalyze policy development. In Uganda, the evaluation team learned about some of the initial community level surveys underway; it also learned that the Uganda Bureau of Statistics had shared data on livestock production, health, and anticipated trajectories. A work plan was drafted and organization had begun on a multi-sectoral steering committee. The evaluation team met with the Uganda FAO leader for ASL2050 and the regional FAO leader.

### **How was EPT2 affected by the transition to GHSA?**

When EPT2 became USAID's primary implementing program for GHSA, ETD managers and program partners faced numerous management challenges, including an increased number of countries to assist, new and complicated budgeting and reporting requirements, and technical pivots that constrained EPT2's ability to complete planned work.

Working within GHSA also enhanced EPT2's scope in a manner that supported a OH framework. In-country respondents noted that EPT2 became more flexible in addressing endemic zoonotic diseases (e.g., rabies, anthrax) when they were of high priority to a country, and EPT2 partners and Mission advisors noted this flexibility was useful to encourage OH collaboration between outbreaks.

**Changes in EPT2's number of countries, focus, and reporting requirements:** EPT2 made significant transitions in terms of the number of countries it covered, the responsibilities of staff and partners, and the new GHSA reporting requirements. On the technical side, livestock sampling in Africa suffered.

Under GHSA, EPT2 initiated previously unplanned work at the country level in the West African countries of Burkina Faso, Côte-d'Ivoire, Ghana, Guinea, Liberia, Mali, Senegal, and Sierra Leone. Furthermore, in Kenya and Ethiopia, work originally focused on MERS was expanded to include a spectrum of GHSA activities. In total, EPT2 works in 16 GHSA Phase I countries and an additional 14 focus countries; therefore, more than half of the EPT2 portfolio required new-starts or changes in operational procedures.

ETD staff at headquarters and in the field, as well as EPT2 partners, faced a rapidly changing set of requirements throughout GHSA start-up. As part of an international initiative, coordinated by the NSC on the USG side, ETD was required to provide weekly updates to the USAID administrator, monthly updates to Congress, and quarterly updates to the NSC. More recently, the reporting requirements have been reduced, and now the NSC receives only semi-annual updates.

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<sup>33</sup> To date, no live Ebola virus has been reported.

<sup>34</sup> PREDICT 2 notes that behavioral risk work has been conducted in Sierra Leone.

ETD and its EPT2 partners had to keep the Ebola emergency funds separate and stay current with changes in work plan formats and reporting requirements. Similarly, it was difficult for GH senior managers who needed to assure that the Ebola emergency funds were allocated to meet Congressional requirements and fluid administration requirements in a highly visible USG initiative. For Ebola emergency funds, individual projects were not able to move funds among countries based on expenditures and need, giving USAID less flexibility than it has with EPT2 funding.

On the technical side, as FAO expanded its EPT2/GHSA footprint in Africa, setting up new offices and hiring new staff and consultants, it was challenging to keep up with its expanded work plans. Therefore, FAO decided that it would no longer participate in the livestock sampling, which was a central focus for collaborative field activities with PREDICT 2. As a result, PREDICT 2 reports that livestock sampling was no longer expected to be completed in Liberia, DRC, Rwanda, Republic of Congo, Cameroon, Ghana, Senegal, and Côte d'Ivoire. Some will continue in Ethiopia, Kenya, and Tanzania, where FAO initiated sampling.<sup>35</sup>

In Uganda, respondents told the evaluation team that PREDICT 2 was slated to begin human and wildlife sampling, with FAO sampling livestock as part of a triangulation of unknown emerging disease pathogens in a hot spot identified for potential spillover and amplification. PREDICT 2 in-country staff is planning how to proceed with this priority undertaking.

**Newer USAID GHSA activities joining EPT2:** New GHSA activities are scheduled to begin before EPT2 ends. These will include work on community approaches to epidemic and pandemic preparedness through the International Federation of the Red Cross (IFRC); commodity support; communication to adopt health behaviors, as well as behavioral and social aspects of health risks prior to and following an emergency; AMR, including that affecting agriculture (i.e., livestock) and the food supply; and infectious disease detection and surveillance. EPT2 will thus have new GHSA partners<sup>36</sup> within USAID to coordinate and avoid overlap with in the field.

Respondents familiar with Vietnam noted positive experiences with the IFRC, especially as they operated at the community level during AI outbreaks. USAID/Uganda reported that IFRC has already visited under the new agreement. USAID program managers report that initially eight countries will receive IFRC assistance. In-country government and university stakeholders noted that it was important to work at the sub-national and community levels.

USAID field respondents said AMR related to agriculture/livestock and the human food supply was a key need, as did other donor and government respondents in both regions. As one donor representative explained, "The misuse of drugs for livestock opens opportunities for resistance to disease that can spill over to humans."

Insufficient availability of commodities for preparedness in African countries surfaced in examples of outbreak response in Uganda, Cameroon, and DRC. In Africa, many respondents, including other donors, said USAID should focus more on preparedness commodities, such as PPEs and diagnostics.

However, several USAID respondents in Africa or with African experience suggested that EPT2 go beyond assistance from the global health sector and tap other USAID programs working in energy, transportation, economic growth, and trade. Several of these respondents said they were familiar with after-action reports from the West African Ebola outbreak that noted the weakness of infrastructure, including roads, power, and telecommunications. Last, several Mission advisors asked for flexibility to have a small amount of EPT2 funding in-country for country-specific priorities.

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<sup>35</sup> PREDICT 2 2017 Semi-annual Report, p. 22.

<sup>36</sup> Some will be projects; others will be activities within projects.

**Country endemic disease priorities receiving attention under GHSA:** Several respondents said GHSA affected their thinking about addressing endemic threats as a way to build up capabilities to prevent, detect, and respond for EPTs. Several EPT2 partners and government counterparts noted that, as GHSA rolled out in Africa, working on a country's capacity to prevent, detect, and respond to zoonotic endemic diseases (e.g., rabies) provided country buy-in to the OH approach, as well as expertise and skills that could be applied to detecting and responding to emerging pathogens. A few Mission advisors who participated in the GHSA disease prioritization process and/or who had worked to combat endemic diseases in Africa or Asia concurred.

### QUESTION 3

*How has EPT2 engaged or coordinated with international organizations, donors, and technical partners to improve "One Health" coordination and to prevent, detect, and respond to emerging pandemic threats?*

### EPT2 Engagement and Coordination

Donors and international technical partners (e.g., FAO, CDC, WHO, World Bank) confirmed the importance of animal and wildlife health agencies and organizations partnering with health agencies to more effectively prevent, detect, and respond to EPTs. They noted that EPT2 is the U.S. organization providing the support needed to strengthen weak agriculture/veterinary services in most, if not all, resource-poor countries. The evaluation team heard great appreciation for USAID, through EPT2, filling this essential niche. USAID/EPT2 leadership also expressed interest in re-engaging with OIE, now under new leadership, in future OH discussions and working with them as a collaborative partner.

**Current status of coordination, convening, and information sharing:** At the country level, the evaluation team found positive international-interagency coordination, with a wide number of technical partners participating directly in the program.<sup>37</sup> EPT2 is providing strong convening skills in bringing host governments, interagency partners, and key country stakeholders together to work toward achieving program objectives.

More centrally, USAID/EPT2 holds regular phone conferences with partners<sup>38</sup> to provide updates on the program and receive updated reports about the partners' activities and achievements. USAID/EPT2 staff and representatives from implementing partners participate in GHSA Ministerial meetings and other OH conferences, particularly about EPTs. EPT2 is also making high-level contributions to technical fora and publications in respected peer-reviewed journals, for which several partners indicated great appreciation.

The team also learned from USAID Agreement Officer's Representatives (AORs) and WHO representatives, that WHO, since its reorganization post-Ebola response, has lacked a single POC, making it difficult for EPT2 leadership and implementing partners to engage more optimally with WHO and presenting an interagency coordination challenge.

**Complementary missions, roles, and projects:** DTRA representatives said that health diplomacy was their main emphasis; however, DTRA also fills gaps in biosecurity, laboratory strengthening, and disease surveillance. In Thailand, Australia's Department of Foreign Affairs and Trade described its funding of community/gender activities through EPT2.

The World Bank described complementary OH efforts in 11 West African countries, as well as in its West Africa Health Office, through its West Africa Regional Disease Surveillance Systems Enhancement Program (REDISSE). This program is providing loans to address surveillance and information systems;

<sup>37</sup> Some in ETD would credit GHSA with this increased coordination.

<sup>38</sup> Some respondents say these meetings occur individually by partners while others report attending EPT2-wide meetings.

strengthen laboratory capacity, epidemic preparedness, and rapid response; and provide workforce training and institutional capacity building for project management, coordination, and advocacy, emphasizing that a OH approach is central to the project design.

CDC described its complementary efforts under GHSA, having provided leadership and support in collaboration with other partners in the conduct of country priority zoonotic disease workshops, stressing a OH approach. It also supports the Field Epidemiology Training Program and the FETPV, strengthening laboratory capacity and veterinary capacity in OH. Furthermore, it conducted a “diseases of unknown origin” study, collecting and testing human specimens for causes of these diseases and identifying new pathogens. The CDC underscored how its work complemented PREDICT 2, which was identifying previously unknown pathogens in wildlife and livestock.

In research and lab strengthening, EPT2 engages and coordinates with colleagues internationally and in the field. The University of Oxford and the Pasteur Institute, operating in both Asia and Africa, are prominent in this engagement. Recently, for example, EPT2 has begun coordinating with University of Oxford in the area of risk mitigation.

Respondents noted the importance of GHSA’s JEE and OIE’s Performance of Veterinary Services tools in assessing country capacity for prevention, detection, and response to EPTs from a OH perspective. FAO underscored the importance of OIE’s veterinary capacity assessments through these tools and, pending OIE’s return to its mission and focus on standard setting, welcomed USAID/EPT2 re-engaging with OIE.

### **Opportunities for Improvement Going Forward**

In addition to partners’ many positive comments, several opportunities were identified for continued improvement as EPT2 enters its final two years and for consideration in future activities:

- Improving communication and information sharing;
- Improving collaboration with partners to strategize together;
- Addressing confusion over EPT2’s specific program and project objectives;
- Addressing confusion with branding of GHSA and OH; and
- Improved coordination within the EPT2 implementing partner group.

**Improving communication and information sharing:** Several partners agreed that increased information sharing was extremely important and would be greatly appreciated. Several headquarter-based and regional partners commented that communication and information sharing with EPT2 had become more irregular; that they felt they “were losing touch with EPT2.” Several said they felt they were “being reported to” during interagency phone calls and at some interagency meetings, with no opportunity for multi-directional information sharing, rather than USAID using the time to share information, experience, and ideas on how projects and resources could be leveraged.

CDC and at least one implementing partner said information and data sharing was “OK,” but mostly informal and irregular. Some CDC representatives felt that information sharing around studies of diseases of unknown pathogens was lacking altogether. They and other partners commented that the value of data collected under EPT2 would be increased if it was made available and could be accessed and used by partners and other stakeholders, adding that this would be an important step toward support and greater likelihood of sustainability. For example, interviews revealed a lack of information sharing with potentially important partners at the NSF-NIH/FIC Ecology and Evolution of Infectious Diseases Program. Representatives interviewed seemed unaware of EPT2 but expressed interest in

learning more about the information it was collecting and in interagency information sharing. When asked if they would be interested in—and use—a “data portal,” they replied with a resounding “Yes!”

**Improving collaboration with partners to strategize together:** Several partners and USAID management respondents described feeling an absence of opportunities for true engagement and strategizing with USAID/EPT2. They stated that although they saw EPT2 as an excellent opportunity to strategize together, with partners describing a potential opportunity to leverage activities and resources to achieve shared goals of improving prevention, detection, and response to EPTs through a OH approach, they perceived a lack of interest by USAID in seeking and obtaining their feedback, input, and advice. These respondents did not provide specific examples; however, these were people who followed zoonotic disease trends, researched other aspects of emerging diseases (i.e., immunization), and were engaged with some of the same governments as EPT2 on supporting OH approaches.

**Addressing confusion over EPT2’s specific program and project objectives:** Several USAID respondents and representatives of interagency partners expressed confusion over EPT2’s specific program and project objectives. Some field stakeholders said EPT2’s program objectives were unknown, adding that even the name “Emerging Pandemic Threats 2” was perceived as confusing in some countries.

**Addressing confusion with branding of GHSA and OH:** Both FAO and WHO respondents said their agencies viewed the name “Global Health Security Agenda” as a solely U.S. program, which made it difficult for them to promote GHSA’s principles, objectives, and activities in their organizations more broadly. CDC said that in some EPT2 countries, an undesired outcome of program efforts was that officials tied OH directly to EPT2, rather than understanding that OH was an approach being implemented by a broader number of ministries, partners, and agencies.

**Improved coordination within the EPT2 implementing partner group:** Several EPT2 implementing partners said a clear pathway did not currently exist for the five partners to more effectively coordinate, collaborate, and share information. In addition, several leaders commented that they lacked an understanding as to what the individual partner/project goals and objectives were, how their activities could complement each other, and how they could help and assist each other in achieving their project-specific objectives, as well as EPT2 objectives. Partner comments and suggestions included:

- “There have been partner meetings of USAID reported. There is not high-level brainstorming or strategizing—get a shared vision on where we are going.”
- “USAID is not a typical donor: flexibility, want to work, maneuver . . . for last 18 months, things have changed—seems there is instability/uncertainty, and this affects morale—hope there is greater stability going forward.”
- USAID “engage some [EPT2 partners]; none of the projects were put in charge of coordination; ETD used to host partner meetings by region but there was no structured follow-up.”

Several USAID respondents, Mission advisors, and partners commented that the implementing partners appeared to be working independently, with little knowledge of the work and activities being conducted by other partners.

#### **QUESTION 4**

*Has EPT2 identified or filled key knowledge gaps to improve the effectiveness of prevention (including risk mitigation), detection, and response to emerging pandemics? If so, what are they? What gaps remain in this field?*

## EPT2 is Filling Key Knowledge Gaps

In reviewing EPT2 reporting, activities, and publications and insights from respondents familiar with the program, the evaluation team identified the following key knowledge gaps that EPT2 fills and tools that in-country stakeholders said improved the efficiency of their programs:

- Detect emergence and prevent spread of H7N9 AI in Southeast Asia;
- Contribute to filling influenza data gaps in Africa and Southeast Asia;
- Improving prediction models;
- Triangulation: wildlife-livestock-humans; and
- Work in risk mitigation.

### **Detect emergence and prevent spread of H7N9 AI in Southeast**

**Asia:** EPT2 is contributing to an immediate, preemptive effort to detect and prevent H7N9 AI from spreading from China the way H5N1 AI has since 2003 (i.e., across Asia into Africa and Europe). As of today, China is the only nation with H7N9 AI in poultry. Laboratory-confirmed H7N9 AI has infected nearly 1,600 people since its discovery in 2013 and the case fatality rate is approximately 40 percent. In 2017, the virus mutated from its low pathogenicity form into a high pathogenicity form. As a result, both China and the United States are developing new H7N9 vaccines. Also in 2017, the CDC Influenza Risk Assessment Tool said the H7N9 AI virus had the highest potential of known influenza viruses to cause the next influenza pandemic.

EPT2's knowledge gained from fighting H5N1 AI and viruses (e.g., H9N2, H7Nx, H5Nx) over the past 14 years led to the international effort to prevent the imminent spread of H7N9 from China and stop it from mutating further and causing a human pandemic. In August 2017, EPT2 supported a two-day meeting in Da Nang, Vietnam, devoted to H7N9,<sup>39</sup> identifying several knowledge and evidence gaps to countering AI, including:

- Optimizing surveillance in animals and mapping poultry value chains to better understand how the virus has spread across much of China and near the border with Vietnam, Laos, and Myanmar;
- Control strategies, including improving farm and live bird market hygiene and biosecurity, and intermittent or permanent closures of markets;
- Vaccination/re-vaccination against new strains when AI viruses mutate;
- Applying new technology, such as pen-side PCR (Polymerase Chain Reaction), the hand-held rapid diagnostic test for H7N9 (see “Tools and technologies highlights” below);
- Holding tabletop and simulation exercises (e.g., in Vietnam, Laos, and Myanmar);
- Coordinating operational responses at the local, regional, and national levels for the inevitable time when H7N9 is detected in Southeast Asia outside China; and



H7N9 warnings at Noi Bai International Airport in Vietnam.

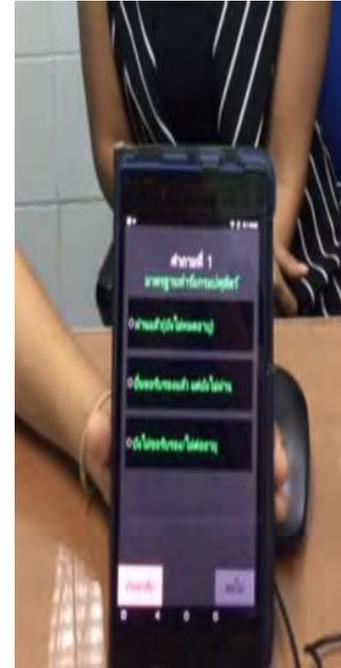
<sup>39</sup> The Da Nang discussion in 2017 was intended to revisit and update assumptions and strategies from an initial H7N9 meeting in 2013 after the virus first emerged.

- Offering compensation to owners of poultry that must be culled when initial H7N9 outbreaks occur in Southeast Asia.

**Contribute to filling influenza data gaps in Africa and Southeast Asia:** EPT2 supported WHO’s GISRS in eight countries in Africa to provide data on seasonal patterns of influenza and what viral subtypes are circulating in human populations (during the 2009 H1N1 influenza pandemic, there was very little data from African countries.). The program also supported WHO to monitor for possible H7N9 infections in locations in Laos, Myanmar, and Vietnam near the border with China. This ongoing surveillance is aligned with FAO’s AI surveillance in livestock in these same countries.

**Improving prediction models:** PREDICT 2 staff and collaborators have a 2017 update of “Global trends in emerging infectious diseases,” a paper by Jones et al. published in *Nature* in 2008 that informed the design of both PREDICT iterations. The updated version, published in October 2017,<sup>40</sup> notes that:

“Despite shortcomings, our improvements to the earlier model allowed us to find quantitative support for previously only hypothesized factors that increase the risk of EID events. Our findings, therefore, have broad *implications* for surveillance, monitoring, control, and research on emerging infectious diseases. Like Jones et al. we find that EID events are observed predominantly in developed countries, where surveillance is strongest, but that our predicted risk is higher in tropical, developing countries. Our spatial mapping has direct relevance to ongoing surveillance and pathogen discovery efforts.<sup>41</sup> It shows that the global distribution of zoonotic EID risk (and the presence of EID “hot spots”) is concentrated in tropical regions where wildlife biodiversity is high and land-use change is occurring. These regions are likely to be the most cost effective for surveillance programs targeting wildlife, livestock or people for novel zoonoses, and for pandemic prevention programs that build capacity and infrastructure to preempt and control outbreaks.”



Smartphone data collection and feedback for farmers is being used in Thailand.

**Triangulation: wildlife-livestock-humans:** The 1998 discovery of Nipah virus in Malaysia was the proof-of-concept that showed the direct link between an “emerging pandemic threat” (Nipah virus) and wildlife (bats), livestock (pigs), and humans (causing a brain infection). A critical focus of EPT2 is to find evidence of such linkages of EPTs in wildlife, livestock, and humans. PREDICT 2, in cooperation with FAO, WHO, and multiple host countries, is collecting samples in humans, wildlife, and livestock in hot spots, and testing results to determine linkages between and among human and animal disease.

To date, none of the triangulation studies are completed (i.e., sampling and analysis completed and reported), yet discussions during field visits indicated it was possible to complete the studies underway in Vietnam, Thailand, and possibly Lao PDR, Indonesia, Cambodia, and Uganda. Respondents who are familiar with the studies outlined the difficulties surrounding them. Challenges in Vietnam and Thailand have centered on the human sampling, including finding appropriate locations, complicated Institutional Review Boards (IRBs), and immediate disease outbreaks that diverted the attention of health professionals from the sampling, as happened with dengue in Vietnam. In Uganda, FAO was scheduled to

<sup>40</sup> Allen T et al., Global Hotspots and correlates of emerging zoonotic diseases (EID), *Nature Communications*, October 2017.

<sup>41</sup> Ibid, note 33, D. Carroll, forthcoming: the Global Virome Project is scheduled to launch in January 2018 at the *Prince Mahidol Annual Conference* in Bangkok, Thailand.

do livestock sampling, as it had done in Thailand, but immediate GHSA priorities overtook the plan. Respondents familiar with the studies in Vietnam and Uganda noted that the samples at present might be too small to detect what the study is trying to identify. Thus, if there is a negative result, EPT2 will have to try again with larger samples.

ETD respondents also pointed to additional avenues of study that contributed to understanding of spillover from animals to humans. For example, MERS surveillance efforts in the Middle East and Northeast Africa are aimed at better understanding how the virus is being maintained in camel populations and spilling over to humans. In a recent EPT2 study, MERS-coronavirus that was detected in bats in Uganda appears to lack the ability to infect human cells, suggesting not all of these viruses can cause disease in people.<sup>42</sup>

**Work in risk mitigation:** Efforts to scientifically identify behaviors and other drivers that increase the risk of spillover, amplification, and spread of EID is another key focus in EPT2. Extensive work is being done on most of the five viral families studied in EPT2 (coronavirus, paramyxovirus, influenzas, filovirus, and flavivirus), and government and program partner respondents working in this area noted that translating this work into effective, sustained behavioral change was extremely difficult. For example, in 2017, PREDICT 2 reported research in DRC and the Republic of Congo on the consumption of bushmeat, which carries the risk of filovirus (e.g., Ebola). Yet, when bushmeat is a traditional source of protein and income that is only rarely linked with disease, it is very difficult for behavioral interventions to succeed. This is also true for MERS-coronavirus, consumption of camel milk, or close physical contact with camels. In terms of improving the management of farms, FAO has found results on model farms when it was supporting the development of guidelines and training of master trainers in specific areas of livestock and wildlife value chains (see Box 6).

An ETD respondent working on mitigation stressed that culturally acceptable communications were essential, that ETD recognized the crucial role for anthropologists, and relationships with anthropologists were being pursued. It is possible that practical lessons in risk mitigation can be extrapolated from the endemic zoonotic priority diseases (e.g., rabies, anthrax, trypanosomiasis) incorporated as part of GHSA to EPTs.

#### **Box 6. Risk Reduction along the Value Chain in Vietnam**

In Vietnam, where poultry value chains are identified as hot spots for disease emergence and spillover, FAO supported the Ministry of Agriculture and Rural Development (MARD) to better understand the poultry value chain and to prevent disease outbreak and transmission along the poultry value chain. From May 2013 through July 2017, MARD developed guidelines for hatchery, flock, and parent flock biosecurity, developed a manual and trained master trainers on good hatchery management and biosecurity, and conducted training courses. In the past year, a training manual on good management practices and biosecurity for chicken parent flocks was produced and master trainers were trained on management practices and biosecurity for duck parent flocks. Results as of 2017 were positive:

- 100 percent of 16 model farms continue to apply good management and biosecurity practices.
- Minimum biosecurity in poultry hatchery and parent flock farm exists in 63 provinces.
- Two training packages were completed and 27 master trainers for good management practices and biosecurity for poultry hatchery and parent flocks available.

Source: FAO, 2017 briefing; documentation.

<sup>42</sup> Anthony, A.J., K. Gilardi, V. D. Menachery, T. Goldstein, B. Ssebide, R. Mbabazi, I. Navarrete-Macias, E. Liang, H. Wells, A. Hicks, A. Petrosov, D. K. Byarugaba, K. Debbink, K. H. Dinnon, T. Scobey, S. H. Randell, B. L. Yount, M. Cranfield, C. K. Johnson, R. S. Baric, W. I. Lipkin, J. A. K. Mazet. 2017. Further Evidence for Bats as the Evolutionary Source of Middle East Respiratory Syndrome Coronavirus. *mBio*, 8(2). doi: 10.1128/mBio.00373-17.

## Tools and Technologies Highlights

A wide spectrum of tools developed under EPT1 and predecessor programs or EPT2 partners demonstrate improvements in the effectiveness or efficiency of programs intended to prevent, detect, and respond to emerging pandemics.

**Pen-side PCR for H7N9 rapid identification in the field piloted in Vietnam by the Ministry of Agriculture and Rural Development with assistance from FAO:** This hand-held assay, made in Taiwan, is part of earlier work by ETD. It can test in 1.5 hours, does not need a high level of biosecurity, is easy to use in a market or farm setting, and is inexpensive. The sensitivity and specificity for H7 viruses—and specifically H7N9 viruses—have been validated at Hong Kong University facility, where H7N9 virus isolates are tested, including the new 2017 strains.<sup>43</sup>

**PREDICT 2's Emerging Infectious Diseases Information and Technology Hub (EIDITH):** This can now receive data via Excel sheets without keying data and data can be input via handheld devices. EIDITH was used in Thailand to input wildlife and livestock data from different institutions, keeping all information private.

**Smartphone data collection and feedback:** These tools are used to assess human, animal, and wildlife interactions in farms and provide farmers with immediate suggestions on what to do to improve safety for animals and people. They are being piloted in Thailand with information technology (IT) input from Mahidol University.

**Tools developed by EPT2 partners that have proven useful over time:** These include the FAO LMT being used widely under EPT2, and the University of Minnesota's One Health Systems Mapping and Analysis Resource Toolkit, which was developed with U.S. Department of Agriculture assistance and is being used in EPT2 countries, including by CDC.

## Remaining Gaps

**Linking viral discovery to human health risks:** Although funding has not allowed EPT2 to work everywhere in the world, a “devil’s advocate” perspective could argue that the geographical areas selected did not “predict” the emergence of the four major zoonotic viruses that had been EPTs since the 2008 Jones et al. “hot spots” paper was published. These pandemics of severe epidemics in multiple locations (i.e., pan-epidemics) were the 2009 emergence of pandemic H1N1 influenza virus in Mexico; the 2012 emergence of the MERS-coronavirus, first in Zarqa, Jordan, in April, and then in Bisha, Saudi Arabia, in June; the 2013-14 emergence of Ebola in Zaire, West Africa; and the 2014 emergence of Zika congenital syndrome in French Polynesia, followed in 2015 in Brazil and elsewhere in the Americas.

One question the evaluation team heard repeated during headquarters and field interviews concerned the discovery of more than 1,000 novel virus sequences by PREDICT 2: “So what does it mean?” Some respondents suggested that if triangulation linking wildlife, livestock, and humans was not feasible, then perhaps bi-angulation between humans and wildlife, or humans and livestock, could help answer this question. In this regard, a related gap is not having more in-country IRBs for human surveillance to facilitate triangulation or bi-angulation. As of July 2017, only 12 countries have an IRB.<sup>44</sup>

**Electronic database needed for national animal disease surveillance:** A key weakness of the OH approach at this juncture, articulated by several animal health experts, is that animal disease surveillance is still often completed by hand. Consequently, linking animal and human data (e.g., data reported into CDC's Integrated Disease Surveillance and Response framework) is a formidable task. As

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<sup>43</sup> ETD expects the validation study to be completed by November 2017.

<sup>44</sup> As this report was under preparation, PREDICT 2 informed the team that additional IRB approvals came through and that, as of January 2018, IRBs are now approved for all 27 countries.

a result, operational knowledge from disease in animals is lost to government leaders and program managers.

**USAID does not own data collected under PREDICT 2:** Information from interview respondents familiar with PREDICT 2 (including ETD respondents) and a review of the procurement documents provided to the evaluation team suggest that PREDICT 2, not USAID, holds the raw data it collects for its research and models. This dramatically constrains the control over those data for future programing, research, and dissemination. An ETD respondent explained that USAID *would* have access to the data, and noted that “PREDICT plans to upload the findings approved for release (only a subset of samples in four countries so far) to its global website in the near future” and that they will be available to USAID. PREDICT 2 explained that “the PREDICT Consortium holds the raw data collected, though USAID has access to raw data through the AOR.” Separate from the issue of where data reside, respondents noted there were researchers who were aware of and interested in the use of these data for a variety of health, animal, and ecological investigations.

#### **QUESTION 5**

*Is EPT2 on track to meet its objectives (as outlined in the EPT2 monitoring and evaluation [M&E] framework) by the end of the program? If not, which ones are not being met?*

As discussed above, EPT2 is strengthening systems for prevention, detection, and response (including workforce capacity) and the enabling environment for multi-sectoral collaboration. Progress varies by country or region and being “on track” will continue to depend on USAID’s manageable interest within country environments and the understanding that this is a long-term process, one likely to take a generation to realize.

EPT2 has demonstrated that it can provide technical and/or laboratory assistance, before and during outbreaks, and that it has the trust of country counterparts to help them improve prevention, detection, and response while providing learning opportunities. Similarly, strengthening the animal health sector and preparing professionals in OH—especially in countries where EPT2 has developed a OH foundation—is occurring, as is the development of OH platforms, which are often based on earlier attempts to unite human and animal health officials around a zoonotic outbreak.

#### **ETD’s M&E Framework**

Over the last two years, ETD invested its time and that of its partners to develop a M&E Framework that provides quantitative indicators for tracking progress towards achieving EPT2’s goal to “reduce risk and impact of EPTs, applying a OH approach.” The framework objectives and indicators are shown in Figure 3 (March 27, 2017). Performance Indicator Reference Sheets following the USAID format were completed on April 10, 2017.<sup>45</sup>

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<sup>45</sup> As this report was being prepared, updated versions of the M&E Framework and the Performance Indicator Reference Sheets were published, taking into account experience from the first round of data collection.

**Figure 3. ETD M&E Framework**

<b>Emerging Threats Division Performance Indicators</b>		
<b>Goal:</b> Reduced risk and impact of emerging pandemic threats, applying a One Health (OH) approach		
<b>Objective 1: Systems for prevention, detection and response strengthened</b>	<b>Objective 2: Workforce capacity for OH strengthened</b>	<b>Objective 3: Enabling environment for multisectoral collaboration strengthened</b>
<ul style="list-style-type: none"> <li>a) #, list of recommended risk mitigation approaches that have been implemented and/or scaled up (FAO)</li> <li>b) Median # of days from sample collection to initial test result to report (outbreaks) (FAO, P2)</li> <li>c) #, % of labs improving quality assurance and safety procedures (FAO, WHO)*</li> <li>d) #, % of countries with improved capacity to conduct outbreak investigations (FAO)*</li> </ul>	<ul style="list-style-type: none"> <li>a) #, list of new or modified OH education and training programs (OHW, FAO)</li> <li>b) % of surveyed current professionals that report application of OH approaches in their work (OHW, FAO)*</li> </ul>	<ul style="list-style-type: none"> <li>a) #, % of national coordination mechanisms showing improved capacity (P&amp;R)*</li> <li>b) #, % of OHUNs showing improved organizational capacity (OHW)*</li> <li>c) #, list of global, regional or country strategies under implementation (FAO, OHW, P&amp;R, WHO)</li> </ul>
<p><b>Output 1.1: Evidence-based mechanisms for prevention strengthened</b></p> <ul style="list-style-type: none"> <li>a) #, list of characterized risk factors and/or interfaces associated with spillover; amplification and/or spread (FAO, P2)</li> <li>b) #, list of viral, bacterial, or other disease risk pathway models or maps developed and/or refined (FAO, P2)</li> <li>c) #, list of intervention points prioritized for development of risk mitigation approaches (FAO, P2)</li> <li>d) #, list of risk mitigation approaches recommended for implementation and/or scale-up (FAO)</li> <li>e) #, list of community OH and risk communication events (OHW, FAO)</li> </ul> <p><b>Output 1.2: Mechanisms for detection and response strengthened</b></p> <ul style="list-style-type: none"> <li>a) #, % of labs with the ability to perform PREDICT/FAO testing (FAO, P2)</li> <li>b) # of target (African) countries that shipped influenza specimens to WHO-CCs (WHO)*</li> <li>c) # of P&amp;R plans in place (FAO, P&amp;R)</li> <li>d) # of exercises conducted to test P&amp;R plans (FAO, P&amp;R)</li> </ul>	<p><b>Output 2.1: Education and training capacity to address OH workforce needs strengthened</b></p> <ul style="list-style-type: none"> <li>a) # of faculty members that received OH training or professional development (OHW)</li> <li>b) #, list of educational materials developed (OHW, FAO)</li> </ul> <p><b>Output 2.2: Core competencies of future and current OH professionals strengthened</b></p> <ul style="list-style-type: none"> <li>a) # of future professionals trained (OHW, FAO)</li> <li>b) # of students placed in OH fellowships (OHW)</li> <li>c) # of current professionals trained (OHW, FAO, P2, WHO)</li> </ul>	<p><b>Output 3.1: National/Regional OH coordination mechanisms strengthened</b></p> <ul style="list-style-type: none"> <li>a) #, list of new NCMs/NOHPs established (P&amp;R)</li> <li>b) #, % of NCMs/NOHPs at each capacity level (P&amp;R)*</li> <li>c) #, list of new member schools added to OHUNs (OHW)</li> </ul> <p><b>Output 3.2: Advocacy and communication to advance OH practices and policy improved</b></p> <ul style="list-style-type: none"> <li>a) #, list of high-level multisectoral and/or multilateral events coordinated (FAO, P&amp;R, OHW)</li> <li>b) #, list of tools for implementation or operationalization developed (OHW, FAO, P2, P&amp;R)</li> <li>c) #, list of evidence-based informational resources developed (OHW, FAO, P2, P&amp;R, WHO)</li> <li>d) #, list of policy briefs developed and disseminated (FAO, P&amp;R, P2, OHW)</li> </ul>

28 March 2017

\* Data for indicators 1c, 1d, 1.2b, 2b, 3a, 3b, 3.1b will be available beginning in Year 3.

FAO asked to be the POC for the indicator process and worked with USAID, WHO, and the three CAs to delineate three objectives, six sub-objectives, 30 indicators, and program partner responsibilities for each indicator in the M&E Framework. Following completion of the final Framework, now under review, FAO will report on the indicators, and WHO's influenza group will report on select ETD indicators beginning in Year 3.

Despite being a centrally funded and managed program, ETD chose to launch the collection of indicators from the bottom up. Preliminary data is available in draft for 27 countries and was made available to the evaluation team. The next step will be an aggregation of the information to the global level.

EPT2 partners explained that prior to the development of the M&E Framework, the three CAs reported against the program's strategic focus areas or, in the case of P&R to an M&E framework aligned with the project's objectives. In reviewing the spring 2017 semi-annual reports for PREDICT 2, OHW, and P&R, the evaluation team noted that EPT2 was reporting many of the same indicators in the M&E Framework at the aggregate level, while country-specific documents reviewed showed the country-level indicators that were aggregated for the semi-annual reports. The evaluation team also noted that PREDICT 2 and P&R tended to report in the text of their public reports, and OHW reported in both text and indicator tables. Prior to the new M&E Framework, FAO and WHO reported on specific EPT2 activities, but not indicators.

When the evaluation team asked USAID and EPT2 partner respondents about meeting the M&E Framework (i.e., Question 5), the responses focused on the framework itself. Overall, respondents said it was important for EPT2 to have an M&E Framework and indicators, and many noted the Framework was coming very late in the program. And, for ETD, having to develop a framework that worked for both EPT and GHSA delayed the process.

Other comments included:

- USAID and partner respondents appreciate ETD help throughout the indicator process.
- Some USAID respondents felt that country-level indicators should be directed more to what governments were achieving and the information needed to be useful to country stakeholders.<sup>46</sup>
- Some respondents expressed concern about output indicators that called for number counts (e.g., the number of training programs and policy briefs) when quality and usability are more critical.
- There was concern that some indicators did not pick up the granularity of PREDICT 2's work, (e.g., identifying pathogens with risk potential; lab capacity in all five viral families).
- A few respondents in Africa and Asia said it was important to link EPT2 indicators with GHSA indicators; some said that was happening.
- One USAID respondent noted it was a surprise that FAO was the POC for the effort, given that the PIO "did little reporting against the EPT2 goals and objectives itself."<sup>47</sup>

### Meeting M&E Framework Objectives<sup>48</sup>

As expected, progress varies by how long countries had been involved in the EPT programs. Asian countries, which have been part of EPT for a decade, show more progress in the level of sophistication host governments bring to both policy development (e.g., OH and preparedness strategies) and the ability to respond to outbreaks compared to the African region which, for the most part, began with EPT2.

At this initial stage, indicators are tracking individual project work plans. So, for example, each country is designated with a number of laboratories expected to be able to follow FAO or PREDICT 2 protocols (Output 1.2.a.).<sup>49</sup> Indonesia reports having 10 laboratories using the protocols, and Vietnam reports nine, some of which are outside the capital, Hanoi. Thailand, which has a strong existing laboratory system, has one. During interviews, laboratory experts in Thailand reported that EPT2 protocols, whether from PREDICT 2 or FAO, are not the only internationally accepted ones they work with. In Africa, in Year 2, Cameroon did not have a university in OHCEA and showed no current professionals trained, while DRC and Uganda, respectively, showed 296 and 88 future professionals trained. In short, at this stage in the development of the M&E Framework, country-specific knowledge is key and cross-country comparisons may be misleading.

With added information, different regional approaches can be better understood. For example, in training current professionals (Output 2.2.c.) in West Africa, countries are focused on strengthening one or two national laboratories and developing a relatively small workforce. Other parts of Africa, such as Cameroon and DRC, show modest numbers of current professionals trained. Respondents with outbreak experience in these countries noted the need for more current professional training, but also

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<sup>46</sup> A POC in Asia noted that ETD provided in-country assistance to make country data more useable in his country's context.

<sup>47</sup> This statement referred to indicator reporting completed by EPT2 partners prior to the development of the ETD M&E Framework.

<sup>48</sup> Note that this review looked at preliminary country tables before regional or inter-regional tables, in some cases before the tables were complete.

<sup>49</sup> FAO reports using capacitating laboratories to work with the same five viral families as PREDICT 2; however, the indicator does not include that information and the two are reported separately.

suggested that mobile laboratories might extend the reach of those trained within their countries and across borders. As of Year 2 in Asia, the number of professionals trained in Indonesia stood at 888, 414 in Vietnam, and 361 in Thailand. These foundations, combined with respondents' calls for more training at the sub-national level that coordinates sector representatives using a OH approach, may further inform program targets for some Asian countries to include location of training in work plans.

While only a snapshot, the breadth of the risk mitigation activities implemented in Vietnam (Output 1.a.), and both plans (Output 1.2.c.) and strategies (Output 3.c.) in Indonesia, provide models for program and policy development assistance under EPT2. Within GHSA AP focal meetings, countries have the ability to share and absorb each other's experiences.

Anomalies in these data also provide insights. For example, in Year 2, Uganda was just developing a OH platform, yet OHCEA assisted with a variety of zoonotic and other outbreaks. Also, Cameroon was just talking about university networks in Year 2, thus the "zero" under training for future professionals (Output 2.2.a.) gives a sense of how important it was to get that program off the ground in Year 3. It is important to have the skills and assistance EPT2 provides to train and operate using a OH approach.

ETD expects that many of the key objective-level indicators will be reported on in Year 3 (Outputs 1c, 1d, 1.2b, 2b, 3a, 3b, 3.1b). As the indicators get filled in, a clearer sense of accomplishment and shortcomings will be evident. Combined with country-level monitoring, these M&E Framework indicators can be used to flag potential roadblocks, such as program areas that require additional attention and confusion on how to report. With a second round of data and country monitoring, the ETD M&E Framework should help inform whether EPT2 and other programs looking to prevent, detect, and respond to zoonotic threats using the OH approach are moving toward their stated objectives.

### Perceived Needs and Gaps

Despite progress, respondents and the documents reviewed for this evaluation indicated several difficult issues related to strengthening that could affect whether EPT2 succeeds or is perceived to have succeeded. In interviews, these challenges were referred to as "needs" or "gaps" and often came with the following advice:

**Policy development to engender a OH environment takes time:** For countries lacking operational OH platforms that can work across sectors to prevent, detect, or respond to an outbreak, those platforms and the bureaucratic and strategic underpinnings for them need EPT2 attention. In-country respondents noted that, in some cases, this process would take longer than the two years left in the program and that EPT2 might have to engage at a higher policy level in some countries (e.g., with prime ministers and ministries of finance).

**Moving to the sub-national level:** ETD, Mission advisors, and stakeholders—especially in Asia—see the next move for EPT2 as supporting work at the sub-national level. This point applies to both the sub-national government structure and to communities in hot spot areas. Activities for sub-national support include training and sensitization on prevention, detection, and response using a OH approach, and approaches to community and government coordination using a OH approach. Specifically, there was a call for evidence-based implementation of risk mitigation for farmers, markets, and communities, and the FETPV for sub-national government officials.

**Triangulation takes time:** On the scientific side, respondents noted the importance of EPT2 attempts to triangulate how potentially pandemic diseases can pass from wildlife and animals to humans, but said the program was moving much too slowly in this area. They also noted that EPT2 should focus and concentrate on (i.e., prioritize) the attempts at triangulation that are farther along. An ETD respondent close to this work noted that "there was an under-appreciation by ETD of how challenging surveillance triangulation would be to implement."

## V. CONCLUSIONS AND RECOMMENDATIONS

The knowledge gaps that EPT2 and its predecessors have filled, and will strive to fill in the future, can be compared to the two main parts of the immune system: innate immunity and adaptive immunity. Uniquely, EPT2 is most like the innate immune system that is always present, working to identify and stop (detect and prevent) potential threats “upstream” (PREDICT virus discovery), rather than only waiting to respond (“adapt”) to threats after they have emerged. Once a threat has emerged (e.g., H7N9), however, then EPT2 can also respond quickly to help prevent further spread of the threat. – D. Lucey, October 2017

The following conclusions are based on findings by questions and linkages the evaluation team found across all five evaluation questions. While selected findings may identify with a particular project or activity within EPT2, the intent is to provide feedback for the program as whole.

Note that some recommendations are directed to EPT2 and others to USAID. Those designated for EPT2 are issues that can, if the recommendation is accepted, be implemented within the program itself. Recommendations designated for USAID require implementation support within USAID (e.g., USAID or GH leadership, USAID Missions), beyond EPT2 and the ETD. The evaluation team believes work on all recommendations could begin under EPT2, and that Recommendations 2, 3, and 4 can be completed before closeout.

### **CONCLUSION I: STRATEGIC PLANNING AT THE COUNTRY, REGIONAL, AND GLOBAL LEVELS**

Developing a OH culture is critical, difficult, and takes a long time (15 to 20 years). USAID’s involvement with AI countries, such as Vietnam, Indonesia, and Thailand, demonstrate that country-specific responsiveness and commitment to OH, information, and capacities in animal health, and the disease threats they face, require different programmatic approaches. From this experience came approaches to develop a new pipeline for a One Health workforce at the pre-service level, to provide convening opportunities for human and animal health officials to work together during outbreaks, and investigate and model patterns of disease transmission. Throughout these country evolutions, the assistance to strengthening the animal health sector (i.e., livestock and wildlife) to collect, use, and act on information was key. It is important to strengthen the animal side of the OH equation, especially in Africa.

International attention to zoonotic threats has increased since the West Africa Ebola outbreak, and launch of the GHSA has led the USG and other donors to move into rapid, results-oriented outputs across countries using the JEE and the WHO’s International Health Regulations as tools. These tools provide indicators of how countries are moving along a spectrum of being able to prevent, detect, and respond to infectious diseases, and what countries need to work on. USAID is adding new activities (e.g., AMR, supply chain, and risk communication) to contribute to GHSA. Yet, the short-term focus of the JEEs and possible outbreak responses run the risk of crowding out EPT2’s ability to develop a OH foundation at the university level or its work in global predictive capacities for pandemic zoonotic threats. It is useful that some of this more long-term strengthening, such as policy development and modeling risk, will be captured in the new M&E Framework.

At present, the projects in the EPT2 program work from annual work plans developed at the country, regional, or global level. Participants at the country level include Mission advisors for EPT/GHSA, health office staff and mission leadership, and implementing partners engaging government stakeholders in their technical areas. At USAID headquarters this is led by the AORs with other ETD/GHSA staff. For EPT2’s

GHSA countries, the flexibility of this process is constrained by the GHSA budget construct, in which funds are allocated to countries by project and are then not fungible.

The evaluation team agrees with respondents who noted that progress and timelines do and will continue to vary by region and between countries and that single “cookie-cutter” approaches are not useful or acceptable to country stakeholders in the long run. The team also emphasizes that a strategic process should be used to weigh the various EPT2 projects, new USAID GHSA projects, and other coordination with sectors covered by USAID outside GH (e.g., economic growth) as part of an overall USAID strategy in a country. Without this investment in country-level strategy development, the ability of USAID to continue a leadership role in this field will likely suffer.

**Recommendation 1.a:** USAID should ensure that strategic planning for EPT2 centers around in-country stakeholders and includes ETD managers and advisors in Washington, D.C., and the field, USAID Mission leadership, and EPT2 partners, including new USAID GHSA implementing partners as they come on board. When appropriate, strategic planning should occur in concert with other relevant USG and international partners.

**Recommendation 1.b:** At the global level, USAID should create an international advisory council to monitor the progress of its programmatic and research work to reduce the threat of infectious diseases with epidemic or pandemic potential, in keeping with EPT2’s long-term goal.

## **CONCLUSION 2: ADDRESSING IMMEDIATE THREATS**

EPT2 assistance in capacity building, policy development, and outbreak response are good examples of how the program has helped countries prepare for and respond to zoonotic threats. Examples include progressively better OH responses in Cameroon between H5N1 and monkeypox outbreaks (Box 4), and the progression toward a OH approach in the DRC YF outbreak (Box 5). Vietnam’s rollout of surveillance and preparedness to address the threat of H7N9 in China, aided by EPT2 cross-sectoral approaches, is focused on potential spread of diseased poultry and wildlife within its borders, as well as across borders with its neighboring countries. EPT2 should continue its work in Vietnam. Lessons learned from these experiences could also be of importance in Egypt’s preparedness for regional transmission of H5N1.<sup>50</sup>

While animal (livestock and wildlife) surveillance and laboratory capacities are still generally weak, especially in Africa, examples of EPT2 assistance suggest there is country buy-in for cross-sectoral collaboration when a threat is identified, and point to the advantages of being preemptive, especially for AI, MERS, Nipah, Ebola, and YF.

EPT2 supports animal health skills that are vital during outbreaks, including sampling and biosecurity. It also supports enabling country stakeholders, including students, to learn to use those skills in real-time during outbreaks.

Having a strong in-country PREDICT 2 presence provides an important and appreciated “go-to” place for advice, and PREDICT 2, FAO, and WHO are key partners when formal assistance is requested during an outbreak. USAID is correct, however, to encourage cooperation between ETD and USAID’s Bureau for Democracy, Conflict, and Humanitarian Assistance in the event USAID is called on for a large-scale response, such as the West African Ebola outbreak.

**Recommendation 2:** USAID should continue to assist countries (or regions) to preemptively address immediate threats, including cross-country activities.

## **CONCLUSION 3: STRENGTHENING THE OH WORKFORCE**

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<sup>50</sup> In 2017, EPT2 convened a meeting that reviewed H5N1 in Egypt and surrounding countries.

EPT2 strengthens the OH workforce through in-service capacity building and training in animal sampling, surveillance, labs, biosecurity, and OH outbreak preparedness with government agencies and laboratories. This training focuses on people and content that respondents and JEE results indicated was the most pronounced weakness in countries' capacity to prevent, detect, or respond to zoonotic threats. Many countries in Africa, especially West Africa, lack the capacity to test samples in-country, and there is an increased demand for the FETPV.

EPT2's university network program raises OH awareness, skills, and employment potential for graduate and undergraduate students in public health, veterinary medicine, and other related fields. Respondents in government and the international donor community in countries with strong network programs expressed a demand for such students. Government officials said they looked to prominent universities for current and future professionals, as well as the central and sub-national levels.

The inter- and intra-university collaboration needed to establish these programs and attract outside expertise, including from USG agencies, is time-intensive. Nevertheless, more established programs are finding input from government on needed skillsets and feedback from alumni exposed to a OH approach is enabling them to fine-tune their programs. For example, donor and government respondents found field training in outbreak response and risk mitigation in communities useful for the future workforce. Over time, a greater focus on skill needs may require a "graduation" from network activities that are less critical to EPT2 objectives, such as field experience for students not planning to work in OH or the preparation of communication products designed for OHW's use.

Another area for re-evaluation is how USAID supports the two regional networks, OHCEA and SEAOHUN. The obvious progression is for USAID to fund university networks directly through these regional hubs, both of which have strong name recognition among stakeholders in the OH field. During the evaluation team's field visit, OHCEA was focused on getting new members and discerning how to attract sources of support outside of USAID. SEAOHUN is in the process of developing a legal structure to accept other funding but is undergoing leadership challenges. Neither appears ready to move toward becoming a direct partner with USAID, and as country networks in Asia mature, the value-added of a regional network as currently envisioned should be reassessed. And while it is evident that national governments are interested in and support teaming with university networks, most should not be targeted to provide financial support for OHUNs, because they are not fully supporting their own OH training activities.

Other important training is necessary to implement a OH approach in public health. Countries in West Africa report a dearth of veterinarians, and other governments say veterinarians work in the private sector. GHSA observers noted that training of para-veterinary workers and community animal workers was necessary. While this training is important, it is not in EPT2's manageable interest to directly support it outside of the existing government and university platforms that the program is strengthening.

**Recommendation 3.a:** EPT2 should accelerate support for the FETPV and veterinary capacity within in-service and future professional programs and continue to capacitate local labs to test samples in-country.

**Recommendation 3.b:** While national governments are unlikely to directly fund OHUNs, EPT2 should continue to encourage links between these networks and governments regarding what to train, who to train, and what positions graduates will hold.

**Recommendation 3.c:** EPT2 should clarify the intended progression, value-added, and role for the regional OHCEA and SEAOHUN networks. Might regional networks become independent regional centers funded directly by USAID?

## **CONCLUSION 4: ANIMAL DISEASE SURVEILLANCE**

A strategic focus area of EPT2 is the development of “longitudinal data sets for understanding the biological drivers of viral evolution, spillover, amplification, and spread.” Among these biological drivers, which are important because they ultimately affect human health, wildlife is a neglected area for pathogen detection. Thus, identifying relationships or linkages between viral pathogens detected in or characterized from wildlife and the health risks they pose to humans is key to meeting EPT2’s goal, and, in turn, advocating for sustained funding for pathogen detection in wildlife.

PREDICT 2 has demonstrated progress toward investigating critical linkages through its wildlife surveillance, as well as its modeling of wildlife pathogens, human risk behaviors, livestock production, and value chains. Significant external challenges exist to completing all of the project’s planned triangulation studies that sample humans, livestock, and wildlife in areas with high risk of spillover and amplification. Within EPT2, those triangulation studies are critical to demonstrating the theory behind the program. The evaluation team believes that studies in Vietnam, Thailand, and perhaps Uganda are far enough along to have sampling and characterizations completed by the end of EPT2, and that it is important to do so. However, it should be noted that respondents familiar with PREDICT 2 in Asia cited one caveat: The sample size in these studies may be too small to detect linkages if there is little disease present.

In identifying viral pathogens, PREDICT 2 has strict protocols for protecting country data. Approval from three pertinent ministries—usually health, agriculture and environment—is necessary before findings are released. Some respondents noted that the slowness of the process precludes receiving the information in time to be useable; however, respondents familiar with PREDICT 2 said these protocols had made it easier to conduct their surveillance. The evaluation team agrees that it is a country’s decision to share data on its disease patterns, and strongly supports the efforts of WHO and OIE to improve data transparency and reporting globally. That said, interviews and review of procurement documents suggested that although PREDICT 2 has the raw data collected under the project, USAID does not, even in a secure format. PREDICT 2 respondents explained that “the PREDICT Consortium holds the raw data collected, though USAID has access to raw data through the AOR.” While the evaluation team is not qualified to provide a legal opinion on data rights and ownership, we believe clarity is required with respect to USAID’s legal authority over data collected, as opposed to “accessed” under PREDICT 2, given the finite nature of the project used to collect the data and the possible future uses for those data.

**Recommendation 4.a:** USAID should investigate whether there are linkages between the viral pathogens it identifies and risks posed to human health, especially risks from wildlife.<sup>51</sup>

**Recommendation 4.b:** EPT2 should complete initiated triangulation sampling and reporting in Vietnam, Thailand, and Uganda by program closeout.

**Recommendation 4.c:** USAID should clarify its legal authority over raw data collected under EPT2 that is in the possession of an EPT2 partner.

## CONCLUSION 5: RISK MITIGATION

Two of EPT’s strategic focus areas are to “understand the human behaviors and practices that underlie” the risk of “evolution, spillover, amplification and spread” of new viral threats and “promoting policies and practices that reduce the risk of virus.”

Risk mitigation by behavioral intervention requires an understanding of risk to humans from wildlife and/or livestock. PREDICT 2 identifies pathogens with potential for spillover, amplification, and spread, and develops maps to define, analyze, and/or refine viral pathways and disease risk pathways, and FAO

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<sup>51</sup> Referred to in Question 4 in the “Findings” section (p. 28) as “bi-angulation,” or finding linkages between livestock and humans or wildlife and humans.

has completed work on risk reduction along the value chain. EPT2 has not accomplished as much in actual risk reduction, except for one example given by USAID and partner respondents of an activity in DRC and the Republic of Congo related to bushmeat posing risks for filoviruses (e.g., Ebola or Marburg) that followed from understanding risk pathways to instituting practices that reduce risk.<sup>52</sup>

The ETD M&E Framework tracks the following indicators related to risk mitigation:

- I.1.a. Number, list of characterized risk factors, and/or interfaces associated with spillover, amplification, and/or spread
- I.1.b. Number and list of viral, bacterial, or other disease risk pathway models or maps developed and/or refined
- I.1.c. Number and list of intervention points prioritized for development of risk mitigation approaches
- I.1.d. Number and list of risk mitigation approaches recommended for implementation and/or scale-up

Collecting these data, along with increased attention to local communities, may help EPT2 focus more on risk mitigation; however, it is important for this process to be focused. It will be useful to verify the relevance of the initial data entered in the M&E Framework and to better define what risks EPT2 wants to address. The evaluation team believes that consolidating and focusing on the five viral families that have produced serious outbreaks, some of which are currently posing threats, would be a comparative strength for EPT2. That said, demands of particular country programs may require EPT2 to consider mitigation work for other endemic diseases on a case-by-case basis.

**Recommendation 5.a:** USAID should consolidate and verify risk mitigation data from the ETD M&E Framework for each of the five viral families, with specific examples for known threats (e.g., MERS, AI).

**Recommendation 5.b:** USAID should apply evidence-based interventions that mitigate risk against the priority endemic zoonotic diseases.

## CONCLUSION 6: EPT2'S OH APPROACH IN GHSA

EPT2 has been USAID's major programmatic contribution to GHSA since 2015, focusing on the GHSA APs for zoonotic disease, national laboratory systems, real-time surveillance, and workforce development, while also contributing to AMR, biosafety and biosecurity, and other APs. USAID has begun introducing additional partners for community risk mitigation, AMR, commodities, communication, and infectious disease detection and surveillance, and plans to set up a stronger relationship with its emergency relief program and possibly its food program. Mission advisors noted the importance of increased attention to AMR; the evaluation team agrees, especially in the use of antimicrobials in food animals.

A majority of Mission advisors view their programs as synonymous and operate as such. GHSA in-country counterparts view USAID as the major USG agency focused on animal health and FAO as the international animal lead, which makes participation in a wide range of GHSA deliberations and APs particularly important. Many respondents, especially in country, see USAID as a leader in OH.

We applaud how quickly the FAO, under EPT2, was able to pivot to developing an animal health presence in Africa, and what respondents in country said was strong participation by EPT2 partners in the prioritization of endemic diseases.

It is important to bring a strong OH approach to the implementation of GHSA across all APs, especially as USAID adds partners over the next year. Given existing animal and human health silos, this work

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<sup>52</sup> ETD notes that risk mitigation is a key objective of new work under the IFRC PIO.

could include using collaborative learning opportunities in using a OH approach for prioritized endemic zoonosis (e.g., rabies, anthrax).

**Recommendation 6.a:** USAID should continue to promote a OH approach across all GHSA APs.

**Recommendation 6.b:** USAID should explore further opportunities to address AMR using a OH approach.

**Recommendation 6.c:** Where animal and human health systems are operating separately, USAID should consider using collaborative learning opportunities for a OH approach to preventing prioritized endemic zoonosis (e.g., rabies, anthrax).

## CONCLUSION 7: TECHNOLOGY FOR OH

Improved technology to prevent, detect, and respond to disease threats is a critical element in sustaining the services provided under a program such as EPT2, and can help further a OH approach.

A key weakness for the OH approach at this juncture, articulated by several animal health experts, is that most animal disease surveillance is not electronic and cannot be easily linked to human health surveillance, such as that reported into the CDC's Integrated Disease Surveillance and Response framework in Asia. For EPT2, a program building a knowledge base for prevention, spillover, and amplification, this means the data flags that should trigger investigation and/or action from an animal outbreak are harder to link with information on the human side.

Within EPT2, users give high marks to the current version of PREDICT 2's EIDITH database, which is designed to collect sampling and location-specific data for research and modeling. Government collaborators and PREDICT 2 staff in Asia demonstrated handheld devices used for data collection, showing how input of data matrices can be directly uploaded to EIDITH, doing away with keyed entry. Collaborators also explained how the data they collected goes into the system securely, ensuring other in-country collaborating agencies do not have access to their data. As discussed above, there remains a general concern that information from this data collection is not shared in time to be of operational use to programs on the ground. However, this does not diminish the interest and capability to use electronic systems in the field.

Other notable technologies include a pen-side PCR being piloted in Vietnam that saves transportation time and cost of getting initial diagnostic results, and a smartphone app used in Thailand to collect behavioral and environmental information at the farm level, with the option of providing immediate risk mitigation advice to farmers. Given the low level of resources in the animal sector in EPT2 countries and program managers' openness to appropriate technologies, this is an important area on which to focus attention as EPT2 proceeds.

**Recommendation 7.a:** USAID should encourage discussion on how countries can improve electronic reporting on animal health related to zoonosis that is linked with standard human health reporting.

**Recommendation 7.b:** USAID should continue to look for simple, appropriate technological tools to buttress and improve the efficiency of EPT2 and future OH programs.

## CONCLUSION 8: SUSTAINABILITY

EPT2 faces a conundrum. It is designed to help countries develop a foundation for OH approaches to learning, policy-making, and programming. USAID understands this is a long-term undertaking, and that OH requires a long-term paradigm shift. At the same time, USAID is committed to local ownership, desires sustainability of successful programs, and its funds for emerging disease threats are finite. EPT2's support for long-term development of OH systems (such as the national OH platforms and OHUNs)

and its support for sustaining them need to be considered as separate activities, understanding that other potential sources of support will need to have a similar commitment to the OH approach.

Examples of modest government support for OH include:

- In Vietnam, Thailand, Bangladesh, Cameroon, and Indonesia in-kind office space and human resources (e.g., university professors, government lab workers, and surveillance officers) are provided by governments and universities.
- In Bangladesh, the health budget now includes a line item for OH work.

Governments in Asia and Africa do not have the resources to support the FETPV, or other training, or training-of-trainers. Furthermore, despite strong government buy-in for the value of animal health, there are not the resources or the bureaucratic priority to continue this work in agriculture/livestock, especially in environment ministries.

GHSA has attracted considerable international attention that is being placed on the importance of sustaining donor and country support for work in emerging disease threats. For example, a recent World Bank/Wellcome Trust panel's draft calls for countries to adhere to schedules for JEEs and country strategy deadlines, as well as to tap their tax bases and budgets for in-country contributions for preparedness. Yet, this same attention may lead governments to be more passive if they expect continued donor support.

Along with technical strategic priorities, EPT2 needs a strategic plan for sustainability that identifies evidence-based areas in the program that can be sustained and/or institutionalized. EPT2 managers and in-country stakeholders have ideas on what they would like to see, including institutionalization of OH secretariats, in-service training-of-trainers programs, cost-sharing with the private sector, and south-south cooperation as an avenue to share experience with sustainability. These sustainability objectives require technical assistance and funding to accomplish and there is little evidence that EPT2 partners are doing this effectively. In-country entities cannot be told to "just do it" and EPT2 partners need clarity on what paths for sustainability the program can support.

**Recommendation 8.a:** EPT2 should develop a strategic focus area on sustainability and prioritize the sustainability activities it will support. Strengthening the institutionalization of OH University Networks and OH platforms should be among the priority options, as should tapping non-EPT2 technical assistance (e.g., from local entities and other USAID projects).

**Recommendation 8.b:** USAID should bolster efforts to pinpoint and disseminate relevant best practices on sustaining OH in collaboration with in-country stakeholders. Dissemination should be broad, and include a wide range of public, private, academic, and donor audiences, including FAO, OIE, and WHO tripartite, with a view to sustaining best practices.

# ANNEX I. SCOPE OF WORK

Assignment #: 405 [assigned by GH Pro]

## Global Health Program Cycle Improvement Project (GH Pro) Contract No. AID-OAA-C-14-00067

### EVALUATION OR ANALYTIC ACTIVITY STATEMENT OF WORK (SOW)

Date of Submission: 04.10.17

Last update: 08.08.17

#### I. TITLE: USAID Emerging Pandemic Threats 2 Program Evaluation

#### II. Requester / Client

USAID/Washington: Office/Division: GH / ID/HIDN

#### III. Funding Account Source(s): (Click on box(es) to indicate source of payment for this assignment)

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> 3.1.1 HIV     | <input checked="" type="checkbox"/> 3.1.4 PIOET [ETD]      | <input type="checkbox"/> 3.1.7 FP/RH            |
| <input type="checkbox"/> 3.1.2 TB      | <input type="checkbox"/> 3.1.5 Other public health threats | <input type="checkbox"/> 3.1.8 WSSH             |
| <input type="checkbox"/> 3.1.3 Malaria | <input type="checkbox"/> 3.1.6 MCH                         | <input type="checkbox"/> 3.1.9 Nutrition        |
|  |  | <input type="checkbox"/> 3.2.0 Other (specify): |

#### IV. Cost Estimate: \$358,770 (Note: GH Pro will provide a cost estimate based on this SOW)

#### V. Performance Period

Expected Start Date (on or about): May 30, 2017

Anticipated End Date (on or about): March 31, 2017

#### VI. Location(s) of Assignment: (Indicate where work will be performed)

The evaluation will primarily be done in the U.S. (Washington D.C.). Two members of the evaluation team will additionally conduct site visits to two countries (Uganda and Vietnam) that have an established EPT2 program, with all projects represented.

#### VII. Type of Analytic Activity (Check the box to indicate the type of analytic activity)

##### EVALUATION:

**Performance Evaluation** (Check timing of data collection)

Midterm  Endline  Other (specify):

*Performance evaluations* encompass a broad range of evaluation methods. They often incorporate before–after comparisons but generally lack a rigorously defined counterfactual. Performance evaluations may address descriptive, normative, and/or cause-and-effect questions. They may focus on what a particular project or program has achieved (at any point during or after implementation); how it was implemented; how it was perceived and valued; and other questions that are pertinent to design, management, and operational decision making

**Impact Evaluation** (Check timing(s) of data collection)

Baseline  Midterm  Endline  Other (specify):

*Impact evaluations* measure the change in a development outcome that is attributable to a defined intervention. They are based on models of cause and effect and require a credible and rigorously defined counterfactual to control for factors other

than the intervention that might account for the observed change. Impact evaluations in which comparisons are made between beneficiaries that are randomly assigned to either a treatment or a control group provide the strongest evidence of a relationship between the intervention under study and the outcome measured.

## OTHER ANALYTIC ACTIVITIES

**Assessment**

Assessments are designed to examine country and/or sector context to inform project design, or as an informal review of projects.

**Costing and/or Economic Analysis**

Costing and Economic Analysis can identify, measure, value and cost an intervention or program. It can be an assessment or evaluation, with or without a comparative intervention/program.

**Other Analytic Activity (Specify)**

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## **PEPFAR EVALUATIONS** (PEPFAR Evaluation Standards of Practice 2014)

**Note:** If PEPFA-funded, check the box for type of evaluation

**Process Evaluation** (Check timing of data collection)

Midterm     Endline     Other (specify): \_\_\_\_\_

Process Evaluation focuses on program or intervention implementation, including, but not limited to access to services, whether services reach the intended population, how services are delivered, client satisfaction and perceptions about needs and services, management practices. In addition, a process evaluation might provide an understanding of cultural, socio-political, legal, and economic context that affect implementation of the program or intervention. For example: Are activities delivered as intended, and are the right participants being reached? (PEPFAR Evaluation Standards of Practice 2014)

**Outcome Evaluation**

Outcome Evaluation determines if and by how much, intervention activities or services achieved their intended outcomes. It focuses on outputs and outcomes (including unintended effects) to judge program effectiveness, but may also assess program process to understand how outcomes are produced. It is possible to use statistical techniques in some instances when control or comparison groups are not available (e.g., for the evaluation of a national program). Example of question asked: To what extent are desired changes occurring due to the program, and who is benefiting? (PEPFAR Evaluation Standards of Practice 2014)

**Impact Evaluation** (Check timing(s) of data collection)

Baseline     Midterm     Endline     Other (specify): \_\_\_\_\_

Impact evaluations measure the change in an outcome that is attributable to a defined intervention by comparing actual impact to what would have happened in the absence of the intervention (the counterfactual scenario). IEs are based on models of cause and effect and require a rigorously defined counterfactual to control for factors other than the intervention that might account for the observed change. There are a range of accepted approaches to applying a counterfactual analysis, though IEs in which comparisons are made between beneficiaries that are randomly assigned to either an intervention or a control group provide the strongest evidence of a relationship between the intervention under study and the outcome measured to demonstrate impact.

**Economic Evaluation (PEPFAR)**

Economic Evaluations identifies, measures, values and compares the costs and outcomes of alternative interventions. Economic evaluation is a systematic and transparent framework for assessing efficiency focusing on the economic costs and outcomes of alternative programs or interventions. This framework is based on a comparative analysis of both the costs (resources consumed) and outcomes (health, clinical, economic) of programs or interventions. Main types of economic evaluation are cost-minimization analysis (CMA), cost-effectiveness analysis (CEA), cost-benefit analysis (CBA) and cost-utility analysis (CUA). Example of question asked: What is the cost-effectiveness of this intervention in improving patient outcomes as compared to other treatment models?

## **VIII. BACKGROUND**

**If an evaluation, Project (s)/Program being evaluated:**

The **Emerging Pandemic Threat (EPT2) program** is being evaluated. This program is implemented through three cooperative agreements (PREDICT, Preparedness and Response, and One Health Workforce), and through technical collaboration via a PIO Grants with the U.N. Food and

Agriculture Organization as well as the World Health Organization. These partners and projects work together to build capacities to “prevent, detect and respond” to emergent threats.

Project/Activity Title:	<b>PREDICT</b>
Award/Contract Number:	AID-OAA-A-14-00102
Award/Contract Dates:	10/01/14-09/30/19
Project/Activity Ceiling:	\$100,000,000
Implementing Organization(s):	University of California-Davis (Prime) Ecohealth Alliance Metabiota
Project/Activity AOR/COR:	Andrew Clements

Project/Activity Title:	<b>Preparedness and Response (P&amp;R)</b>
Award/Contract Number:	AID-OAA-A-14-00098
Award/Contract Dates:	10/01/14-09/30/19
Project/Activity Ceiling:	\$44,306,762
Implementing Organization(s):	DAI Global (Prime)
Project/Activity AOR/COR:	Nadira Kabir

Project/Activity Title:	<b>One Health Workforce (OHW)</b>
Award/Contract Number:	AID-OAA-A-15-00014
Award/Contract Dates:	10/01/14-09/30/19
Project/Activity Ceiling:	\$50,000,000
Implementing Organization(s):	University of Minnesota (Prime) Tufts University
Project/Activity AOR/COR:	Marilyn Crane

Project/Activity Title:	<b>U.N. FAO PIO Grant (FAO)</b>
Award/Contract Number:	GHA-G-00-06-00001
Award/Contract Dates:	10/01/14-09/30/19
Project/Activity Ceiling:	\$330,000,000
Implementing Organization(s):	FAO
Project/Activity AOR/COR:	Lindsay Parish

Project/Activity Title:	<b>World Health Organization Grant (WHO)</b>
Award/Contract Number:	Multiple awards
Award/Contract Dates:	Multiple awards
Project/Activity Ceiling:	Not available
Implementing Organization(s):	WHO
Project/Activity AOR/COR:	Andrew Clements

**Background of project/program/intervention** (Provide a brief background on the country and/or sector context; specific problem or opportunity the intervention addresses; and the development hypothesis)

Over the past several decades, many previously unknown human infectious diseases have emerged from

animal reservoirs, including agents such as human immunodeficiency virus (HIV), SARS coronavirus, the highly pathogenic avian influenza H5N1, the 2009 H1N1 pandemic influenza virus and more recently the Middle East Respiratory Syndrome (MERS) coronavirus. In fact, more than three-quarters of all new, emerging human diseases have been caused by pathogens originating from animals or animal products. As the interactions between people and animals have intensified, driven by increasing human populations, the spillover, amplification, and spread of new, deadly zoonotic disease threats will increase steadily in the coming decades.

In 2009, USAID launched the Emerging Pandemic Threats program (EPT1), a five-year program targeting the early detection of new disease threats; enhanced “national-level” preparedness and response capacities for their effective control; and a reduction in the risk of disease emergence by minimizing those practices and behaviors that trigger the “spill-over, amplification, and spread” of new pathogens from animal reservoirs to humans. EPT1 complemented an ongoing line of work being supported by USAID since 2005, to control the threat posed by highly pathogenic H5N1 avian influenza virus (AI).

The EPT2 program (2014-2019) has built on the “operational platforms” developed or strengthened during earlier programs supported by the USAID Emerging Threats Division – Avian Influenza,<sup>53</sup> Pandemic Preparedness<sup>54</sup>, EPT-plus<sup>55</sup> and EPT1– and leveraged the technical partnerships and knowledge generated by these efforts to more effectively “prevent, detect and respond” to emerging disease threats. At the core of EPT-2 are seven areas of strategic focus:

1. Developing longitudinal data sets for understanding the biological drivers of viral evolution, spillover, amplification, and spread
2. Understanding the human behaviors and practices that underlie the risk of “evolution, spillover, amplification and spread” of new viral threats
3. Promoting policies and practices that reduce the risk of virus evolution, spillover, amplification, and spread
4. Supporting national One Health platforms
5. Investing in the One Health workforce
6. Strengthening national preparedness to respond to events of public health significance
7. Strengthening global networks for real-time bio-surveillance

EPT2 is implemented through three Cooperative Agreements with the University of California-Davis (PREDICT); the University of Minnesota (One Health Workforce [OHW]); DAI Global (Preparedness and Response [P&R]) and with technical collaboration with the U.N Food and Agriculture Organization (FAO) and the World Health Organization (WHO).

<sup>53</sup> Since mid-2005, USAID, in partnership with USG and international partners, has strengthened the capacities of more than 50 countries for monitoring the spread of H5N1 avian influenza among wild bird populations, domestic poultry, and humans, to mount a rapid and effective containment of the virus when it is found, and to assist countries prepare operational capacities to respond to outbreaks.

<sup>54</sup> In response to growing concern about the possibility of an influenza pandemic, particularly in developing countries, USAID launched a series of efforts including the Humanitarian Pandemic Preparedness Initiative (H2P) in 2007, a partnership with the U.S. Department of Defense’s Pacific and Africa Combatant Commands (PACOM and AFRICOM) in 2008, and in 2009 the PREPARE project to support national capacities (civilian and military) to prepare for and respond to a pandemic.

<sup>55</sup> EPT-plus started in 2011 in response to the emergence in 2009 of the novel H1N1 pandemic virus in Mexico. The geographic focus was China and Vietnam, and focused on the following: 1) conduct influenza surveillance in farmed animal systems where virus diversity is highest; 2) implement surveys to assess biosecurity, animal movements, and epidemiological and animal production characteristics in the systems sampled; and 3) gather detailed information (e.g. sub-type and genetic sequence) for viruses present in these populations to better understand the dynamics of influenza virus evolution in swine and begin to identify “progenitor” influenza viruses that have not yet emerged as public health threats.

The EPT2 program has now reached the mid-point of implementation, and is at a development crossroad. The scope and breadth of the next phase of EPT will be largely determined by Agency priorities, budget realities and the EPT2 program's ability to build sustainable capacities in host countries for the prevention, detection and response to emerging pathogens.

An independent and external evaluation of the Emerging Pandemic Threats 2 (EPT2) program has been commissioned for mid-2017. The assessment is timed to be a midterm review of the portfolio, and will take a retrospective view of the program to identify strengths and challenges, and re-evaluate the initial priorities in light of the evolving state of the science, the budget, and the work of other partners to inform the redesign of the portfolio. The finding from this evaluation is expected to establish the priorities to be addressed in the next phase of the program, thereby improving implementation EPT2, and informing the development of EPT3

### Theory of Change of target project/program/intervention

N/A

### Strategic or Results Framework for the project/program/intervention (paste framework below)

<b>EPT2 Monitoring and Evaluation Framework (below)</b>		
<b>Emerging Threats Division Performance Indicators</b>		
<b>Goal: Reduced risk and impact of emerging pandemic threats, applying a One Health (OH) approach</b>		
<b>Objective 1: Systems for prevention, detection and response strengthened</b>	<b>Objective 2: Workforce capacity for OH strengthened</b>	<b>Objective 3: Enabling environment for multisectoral collaboration strengthened</b>
<ul style="list-style-type: none"> <li>a) #, list of recommended risk mitigation approaches that have been implemented and/or scaled up (FAO)</li> <li>b) Median # of days from sample collection to initial test result to report (outbreaks) (FAO, P2)</li> <li>c) #, % of labs improving quality assurance and safety procedures (FAO, WHO)*</li> <li>d) #, % of countries with improved capacity to conduct outbreak investigations (FAO)*</li> </ul>	<ul style="list-style-type: none"> <li>a) #, list of new or modified OH education and training programs (OHW, FAO)</li> <li>b) % of surveyed current professionals that report application of OH approaches in their work (OHW, FAO)*</li> </ul>	<ul style="list-style-type: none"> <li>a) #, % of national coordination mechanisms showing improved capacity (P&amp;R)*</li> <li>b) #, % of OHUNs showing improved organizational capacity (OHW)*</li> <li>c) #, list of global, regional or country strategies under implementation (FAO, OHW, P&amp;R, WHO)</li> </ul>
<p><b>Output 1.1: Evidence-based mechanisms for prevention strengthened</b></p> <ul style="list-style-type: none"> <li>a) #, list of characterized risk factors and/or interfaces associated with spillover, amplification and/or spread (FAO, P2)</li> <li>b) #, list of viral, bacterial, or other disease risk pathway models or maps developed and/or refined (FAO, P2)</li> <li>c) #, list of intervention points prioritized for development of risk mitigation approaches (FAO, P2)</li> <li>d) #, list of risk mitigation approaches recommended for implementation and/or scale-up (FAO)</li> <li>e) #, list of community OH and risk communication events (OHW, FAO)</li> </ul> <p><b>Output 1.2: Mechanisms for detection and response strengthened</b></p> <ul style="list-style-type: none"> <li>a) #, % of labs with the ability to perform PREDICT/FAO testing (FAO, P2)</li> <li>b) # of target (African) countries that shipped influenza specimens to WHO-CCs (WHO)*</li> <li>c) # of P&amp;R plans in place (FAO, P&amp;R)</li> <li>d) # of exercises conducted to test P&amp;R plans (FAO, P&amp;R)</li> </ul>	<p><b>Output 2.1: Education and training capacity to address OH workforce needs strengthened</b></p> <ul style="list-style-type: none"> <li>a) # of faculty members that received OH training or professional development (OHW)</li> <li>b) #, list of educational materials developed (OHW, FAO)</li> </ul> <p><b>Output 2.2: Core competencies of future and current OH professionals strengthened</b></p> <ul style="list-style-type: none"> <li>a) # of future professionals trained (OHW, FAO)</li> <li>b) # of students placed in OH fellowships (OHW)</li> <li>c) # of current professionals trained (OHW, FAO, P2, WHO)</li> </ul>	<p><b>Output 3.1: National/Regional OH coordination mechanisms strengthened</b></p> <ul style="list-style-type: none"> <li>a) #, list of new NCMs/NOHPs established (P&amp;R)</li> <li>b) #, % of NCMs/NOHPs at each capacity level (P&amp;R)*</li> <li>c) #, list of new member schools added to OHUNs (OHW)</li> </ul> <p><b>Output 3.2: Advocacy and communication to advance OH practices and policy improved</b></p> <ul style="list-style-type: none"> <li>a) #, list of high-level multisectoral and/or multilateral events coordinated (FAO, P&amp;R, OHW)</li> <li>b) #, list of tools for implementation or operationalization developed (OHW, FAO, P2, P&amp;R)</li> <li>c) #, list of evidence-based informational resources developed (OHW, FAO, P2, P&amp;R, WHO)</li> <li>d) #, list of policy briefs developed and disseminated (FAO, P&amp;R, P2, OHW)</li> </ul>
<p>28 March 2017</p> <p>* Data for indicators 1c, 1d, 1.2b, 2b, 3a, 3b, 3.1b will be available beginning in Year 3.</p>		

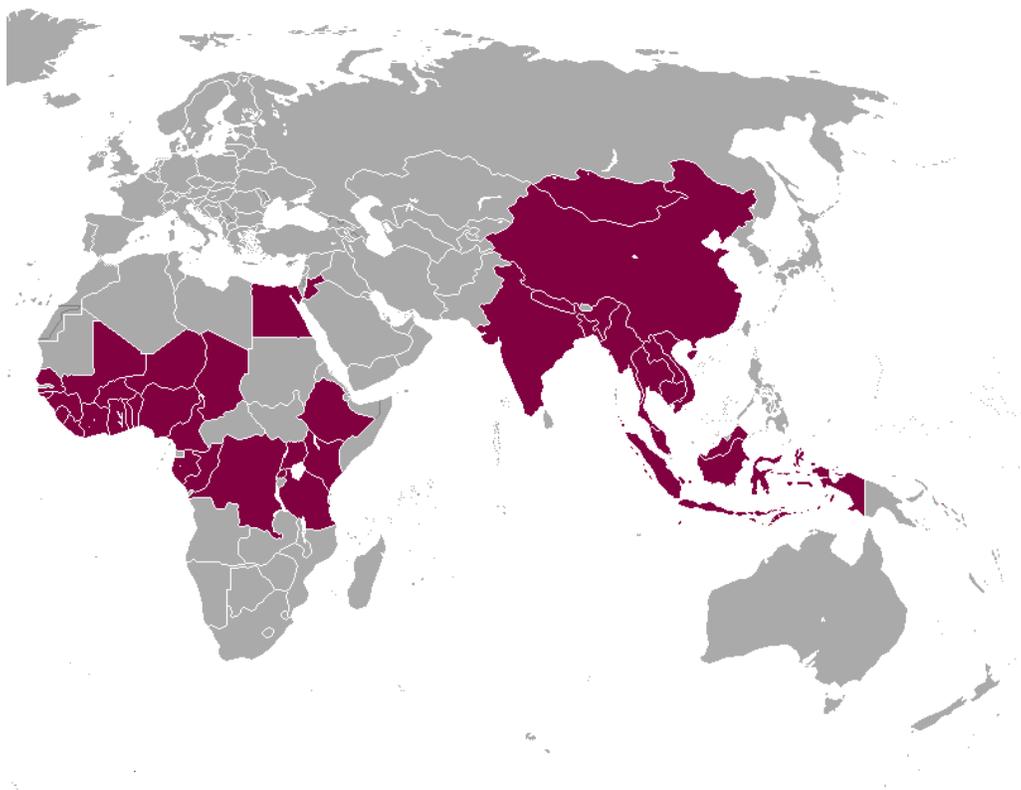
**What is the geographic coverage and/or the target groups for the project or program that is the subject of analysis?**

**Geographic Coverage:**

The evaluation will cover all countries in which any EPT2 project(s) are active. The geographic focus of EPT2 is broadly around historical “hot spots” within countries and “epidemiologic zones” where the risks of viral spill-over, amplification and spread are greatest. This includes the following:

**Asia** (Bangladesh, India, Indonesia, Vietnam, Thailand, Cambodia, Malaysia, Mongolia, China, Nepal, Myanmar, Laos); **Africa** (Burkina Faso, Cameroon, Cote d’Ivoire, Ethiopia, Guinea, Kenya, Liberia, Mali, Senegal, Sierra Leone, Tanzania, Uganda, Ghana, DRC, Rwanda; Guinea-Bissau, Benin, Togo, Nigeria, Niger, Chad); and the **Middle East** (Egypt, Jordan).

Refer to map below.



**IX. SCOPE OF WORK**

- A. **Purpose:** Why is this evaluation or analysis being conducted (purpose of analytic activity)? Provide the specific reason for this activity, linking it to future decisions to be made by USAID leadership, partner governments, and/or other key stakeholders.

This evaluation of the Emerging Pandemic Threats 2 (EPT2) program (which runs from 2015-2019) will serve as a midterm performance review. The evaluation will critically examine the technical approach of the EPT2 program with a view to recommend any appropriate adjustments for consideration in the next iteration of EPT.

The evaluation is will focus on five key questions (see Sec. IX D); document programmatic strengths,

challenges and gaps; identify lessons learned; as well as reassess the initial priorities in light of the evolving state of the science, Agency budget, and the work of other partners and stakeholders. The evaluators are tasked with conducting a technical assessment of the program, and relevant findings and/or appropriate recommendations for adjustments will then be used to design the follow-on phase of the EPT portfolio.

**B. Audience:** Who is the intended audience for this analysis? Who will use the results? If listing multiple audiences, indicate which are most important.

The evaluation report is going to primarily be used by the USAID Global Health bureau leadership and Emerging Threats Division (ETD) staff to (1) inform the design for the next phase of the EPT program, and (2) inform future programmatic investments. Additionally, USAID staff responsible for overseeing the project activities can also use the findings to improve management of EPT2 implementing partners.

The publicly available portion of the EPT2 evaluation report will also serve a secondary audience including USAID implementing partners (IP) and other relevant stakeholders including other USG agencies, host governments and global partners –who may be able to apply some of the lessons learned and programmatic strengths in their own programs.

Any procurement sensitive information (or recommendations/findings that provide information about future USAID investments) will need to appear in a separate annex separate from the public report.

**C. Applications and use:** How will the findings be used? What future decisions will be made based on these findings?

The findings will be used to improve implementation during the final two years of the EPT2 program, and inform the design of next EPT program (2019-2024).

The evaluation team will assess USAID/EPT2 activities with a view to document the following overarching questions:

- 1) What contributions has the EPT2 program made toward developing sustainable country capacity to strengthen cross-sectoral “One Health” capacities and coordination to prevent, detect, and respond to (a) emerging pandemic threats and (b) endemic diseases?
- 2) What contributions has the EPT2 program made toward identifying and filling key knowledge gaps to improve the effectiveness of prevention (including risk mitigation), detection and response to emerging pandemic threats? What gaps still remain?
- 3) What contributions has the EPT2 program made toward engaging and coordinating the efforts of international organizations, donors, and technical partners to improve One Health collaboration as well as prevention, detection and response to emerging pandemic threats?
- 4) How has the EPT2 program contributed to defining and achieving the objectives of the Global Health Security Agenda (GHSA); and how has GHSA supplemental funding impacted the original objectives of the EPT2 program? How did the West Africa Ebola outbreak (which preceded GHSA) affect the original objectives of the EPT2 program?
- 5) What aspects of the EPT2 program are on track to meet objectives (and what program aspects are not likely to meet objectives) by the end of the program period?

The evaluation will need to critically examine the EPT2 portfolio, with a view to make recommendations on adjustments to the following areas, including but not limited to: the overall capacity-strengthening approach (surveillance, lab detection, emergency preparedness or outbreak response); One Health (OH) or multisectoral approach; utility and sustainability of the National One Health Platforms; OH workforce development strategy; geographic focus of the program; and ability to support emergency

responses to emerging disease threats. All of these elements will be considered in designing the next phase of EPT.

**D. Evaluation/Analytic Questions & Matrix:**

- a) Questions should be: a) aligned with the evaluation/analytic purpose and the expected use of findings; b) clearly defined to produce needed evidence and results; and c) answerable given the time and budget constraints. Include any disaggregation (e.g., sex, geographic locale, age, etc.), they must be incorporated into the evaluation/analytic questions. **USAID Evaluation Policy recommends 1 to 5 evaluation questions.**
- b) List the recommended methods that will be used to collect data to be used to answer each question.
- c) State the application or use of the data elements towards answering the evaluation questions; for example, i) ratings of quality of services, ii) magnitude of a problem, iii) number of events/occurrences, iv) gender differentiation, v) etc.

	<b>Evaluation Questions</b>	<b>Suggested Methods</b> <i>What data sources and data collection and analysis methods will be used to produce the evidence for answering this question?</i>
1	What contributions has the EPT2 program made toward developing sustainable country capacity to strengthen cross-sectoral “One Health” capacities and coordination to prevent, detect, and respond to (a) emerging pandemic threats and (b) endemic diseases?	Document Review Stakeholder Interviews Relevant data analysis (if applicable)
2	What contributions has the EPT2 program made toward identifying and filling key knowledge gaps to improve the effectiveness of prevention (including risk mitigation), detection and response to emerging pandemic threats? <ul style="list-style-type: none"> <li>• What gaps still remain?</li> </ul>	Document Review Stakeholder Interviews Relevant data analysis (if applicable)
3	What contributions has the EPT2 program made toward engaging and coordinating the efforts of international organizations, donors, and technical partners to improve One Health collaboration as well as prevention, detection and response to emerging pandemic threats?	Document Review Stakeholder Interviews
4	How has the EPT2 program contributed to defining and achieving the objectives of the Global Health Security Agenda (GHSA); and how has GHSA supplemental funding impacted the original objectives of the EPT2 program? <ul style="list-style-type: none"> <li>• How did the West Africa Ebola outbreak (which preceded GHSA) affect the original objectives of the EPT2 program?</li> </ul>	Document Review Stakeholder Interviews
5	What aspects of the EPT2 program are on track to meet objectives (and what program aspects are not likely to meet objectives) by the end of the program period?	Document Review Stakeholder Interviews Relevant data analysis (if applicable)

Other Questions [OPTIONAL]

**(Note:** Use this space only if necessary. Too many questions leads to an ineffective evaluation or analysis.)

- E. **Methods:** Check and describe the recommended methods for this analytic activity. Selection of methods should be aligned with the evaluation/analytic questions and fit within the time and resources allotted for this analytic activity. Also, include the sample or sampling frame in the description of each method selected.

*General Comments related to Methods:*

ETD's vision for the structure of the evaluation will include the following:

- **Review of key project documents** (outlined in the following section) to understand project goals and assess progress in achieving major milestones. Will also include publications, meeting abstracts, technical guidance, etc. related to EPT2 work.
- The evaluation will require **interviews** with USAID staff both in Washington and in the field, implementing partners, ministry staff, in-country partners, other relevant USG partners (e.g. CDC, DOD), and global partners (e.g. WHO, FAO, World Bank). Interviews will primarily be conducted by phone/video conference, with two site visits.
- **Surveys** can administered through SurveyMonkey or similar site can be used to gather information from a range of stakeholders, in lieu of doing in-person or phone interviews.
- **Data Analysis**
  - a. EPT2 monitoring and evaluation data, as well as project progress reports (quarterly, semiannual and annual).
  - b. EPT2 implementing partners have extensive data (behavioral and epidemiological surveillance data, modeling outputs, animal and human disease outbreak reports etc.). Any data analysis needs that the evaluation team has can be negotiated during the TPM. The ETD unit would suggest limiting the number of requests for ETD or our partners to produce new products because of the time and cost constraints.
- **Field visits** to two countries (Uganda, Vietnam) with major EPT2 investments.

■ **Document and Data Review** (*list of documents and data recommended for review*)

This desk review will be used to provide background information on the project/program, and will also provide data for analysis for this evaluation. Documents and data to be reviewed include:

Documents and data to be reviewed include:

- EPT2 project Cooperative Agreement and PIO Grant documentation
- EPT2 project work plans and country implementation plans
- EPT2 project reports including contractually required annual and semi-annual reports, as well as monthly or quarterly activity progress reports
- EPT2 Monitoring and Evaluation Framework and related data
- Broad range of background documents including relevant scientific publications and updated technical guidance
- Documents pertaining to the Global Health Security Agenda (JEE), including, but not limited to: GHSA Action Package descriptions, GHSA country 5-year roadmaps, 1-year workplans, Joint External Evaluation reports and other relevant information.
- Select background documentation from EPT1 –such as the project final reports, The Road to EPT2, and other relevant material provided by the ETD team.

■ **Secondary analysis of existing data** *(This is a re-analysis of existing data, beyond a review of data reports. List the data source and recommended analyses)*

Data Source (existing dataset)	Description of data	Recommended analysis
The EPT2 portfolio has extensive data – <ul style="list-style-type: none"> <li>• Behavioral and epidemiological surveillance data,</li> <li>• Animal and human disease outbreak reports</li> <li>• Modeling outputs,</li> <li>• Project M&amp;E data</li> </ul>	Program disease and treatment data	Any data analysis needs that the evaluation team has can be negotiated during the TPM. The ETD unit would suggest limiting the number of requests for ETD or our partners to produce new products because of the time and cost constraints.

■ **Key Informant Interviews** *(list categories of key informants, and purpose of inquiry)*

<p>Representatives from the following organizations/programs:</p> <ul style="list-style-type: none"> <li>• A comprehensive list of informants by institution will be provided by USAID.</li> <li>• USAID implementing partners: UC Davis, Ecohealth alliance, Metabiota, Smithsonian Institution, Wildlife Conservation Society, DAI, University of Minnesota, Tufts University, FAO, WHO</li> <li>• USG interagency partners in GHSA implementation: The U.S. Centers for Disease Control and Prevention (CDC), the Department of Defense (DTRA-CBEP), State Department, National Institute of Health (NIH)</li> <li>• International development organizations, including but not limited to: The World Bank, WHO</li> <li>• FAO</li> <li>• Other donors: United Kingdom Department for International Development (DfID), Australian Department of Foreign Affairs and Trade (DFAT), Japanese International Cooperation Agency (JICA)</li> <li>• Private sector partners, including but not limited to: Exxon Mobil, Elanco etc.</li> <li>• Foreign government representatives, including but not limited to: key One Health Ministries responsible for public health, livestock and wildlife, and environment</li> </ul> <p>Using semi-structured interview guides, key informant interviews (KII) will be conducted. These interviews will be conducted at interviewees’ onsite locations or by telephone, whichever is most expedient and cost effective. USAID and USAID ETD Partners will provide a final list of interviewees.</p>
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**Focus Group Discussions** *(list categories of groups, and purpose of inquiry)*

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**Group Interviews** *(list categories of groups, and purpose of inquiry)*

--

**Client/Participant Satisfaction or Exit Interviews** *(list who is to be interviewed, and purpose of inquiry)*

--

■ **Survey** *(describe content of the survey and target responders, and purpose of inquiry)*

The evaluation team may choose to use an online survey method (e.g. SurveyMonkey) to collect data from a broad range of international stakeholders, including mission staff, implementing partners, foreign governments, international organizations, and other stakeholders.
---

This may provide some quantifiable data to measure the effect of EPT2, and complement the qualitative data coming out of the key informant interviews.

If **impact evaluation** –

Is technical assistance needed to develop full protocol and/or IRB submission?

Yes     No

List or describe case and counterfactual”

Case	Counterfactual

## X. HUMAN SUBJECT PROTECTION

The Analytic Team must develop protocols to insure privacy and confidentiality prior to any data collection. Primary data collection must include a consent process that contains the purpose of the *evaluation*, the risk and benefits to the respondents and community, the right to refuse to answer any question, and the right to refuse participation in the *evaluation* at any time without consequences. Only adults can consent as part of this *evaluation*. **Minors cannot be respondents to any interview or survey, and cannot participate in a focus group discussion without going through an IRB.** The only time minors can be observed as part of this *evaluation* is as part of a large community-wide public event, when they are part of family and community in the public setting. During the process of this *evaluation*, if data are abstracted from existing documents that include unique identifiers, data can only be abstracted without this identifying information.

An Informed Consent statement included in all data collection interactions must contain:

- Introduction of facilitator/note-taker
- Purpose of the evaluation/assessment
- Purpose of interview/discussion/survey
- Statement that all information provided is confidential and information provided will not be connected to the individual
- Right to refuse to answer questions or participate in interview/discussion/survey
- Request consent prior to initiating data collection (i.e., interview/discussion/survey)

## XI. ANALYTIC PLAN

Describe how the quantitative and qualitative data will be analyzed. Include method or type of analyses, statistical tests, and what data it to be triangulated (if appropriate). For example, a thematic analysis of qualitative interview data, or a descriptive analysis of quantitative survey data.

All analyses will be geared to answer the evaluation questions. Additionally, the evaluation will review both qualitative and quantitative data related to the project/program’s achievements against its objectives and/or targets.

Quantitative data will be analyzed primarily using descriptive statistics. Data will be stratified by demographic characteristics, such as sex, age, and location, whenever feasible. Other statistical test of association (i.e., odds ratio) and correlations will be run as appropriate.

Thematic review of qualitative data will be performed, connecting the data to the evaluation questions, seeking relationships, context, interpretation, nuances and homogeneity and outliers to better explain what is happening and the perception of those involved. Qualitative data will be used to substantiate quantitative findings, provide more insights than quantitative data can provide, and answer questions where other data do not exist.

Use of multiple methods that are quantitative and qualitative, as well as existing data (e.g., project/program performance indicator data, DHS, MICS, HMIS data, etc.) will allow the Team to triangulate findings to produce more robust evaluation results.

The Evaluation Report will describe analytic methods and statistical tests employed in this evaluation.

## **XII. ACTIVITIES**

List the expected activities, such as Team Planning Meeting (TPM), briefings, verification workshop with IPs and stakeholders, etc. Activities and Deliverables may overlap. Give as much detail as possible.

**Background reading** – Several documents are available for review for this analytic activity. These include EPT2 project (PREDICT, OHW, P&R, FAO, WHO) proposal, annual work plans, M&E plans, quarterly progress reports, and routine reports of project performance indicator data. This desk review will provide background information for the Evaluation Team, and will also be used as data input and evidence for the evaluation.

**Team Planning Meeting (TPM)** – A team planning meeting (TPM) will be held at the initiation of this assignment and before the data collection begins. The TPM will:

- Review and clarify any questions on the evaluation SOW
- Clarify team members' roles and responsibilities
- Establish a team atmosphere, share individual working styles, and agree on procedures for resolving differences of opinion
- Review and finalize evaluation questions
- Review and finalize the assignment timeline
- Develop data collection methods, instruments, tools and guidelines
- Review and clarify any logistical and administrative procedures for the assignment
- Develop a data collection plan
- Draft the evaluation work plan for USAID's approval
- Develop a preliminary draft outline of the team's report
- Assign drafting/writing responsibilities for the final report

**Briefing and Debriefing Meetings** – Throughout the evaluation the Evaluation Team Lead will provide briefings to the USAID POCs. The In-Brief and Debrief are likely to include the all Evaluation Team experts, but will be determined in consultation with USAID. These briefings are:

- **Evaluation launch**, a call/meeting among the USAID, GH Pro and the Team Lead to initiate the evaluation activity and review expectations. USAID will review the purpose, expectations, and agenda of the assignment. GH Pro will introduce the Team Lead, and review the initial schedule and review other management issues.
- **In-brief with USAID**, as part of the TPM. At the beginning of the TPM, the Evaluation Team will meet with USAID to discuss expectations, review evaluation questions, and intended plans. The Team will also raise questions that they may have about the project/program and SOW resulting from their background document review. The time and place for this in-brief will be determined between the Team Lead and USAID prior to the TPM.
- **Workplan and methodology review briefing**. At the end of the TPM, the Evaluation Team will meet with USAID to present an outline of the methods/protocols, timeline and data collection tools. Also, the format and content of the Evaluation report(s) will be discussed.
- **In-brief with EPT2 implementing partners** to review the evaluation plans and timeline, and for the implementing partners to give an overview of their respective projects to the Evaluation Team.
- **Biweekly briefings with USAID**: The evaluation team will provide biweekly briefings to

USAID (through email or phone call) to discuss progress, challenges and findings as they develop.

- **EPT2 implementing partners:** EPT2 implementing partners being evaluated will have an opportunity to review the preliminary findings of the evaluation report, and provide any feedback or clarification to the evaluation lead prior to the final debrief with USAID.
- A **final debrief** between the Evaluation Team and USAID will be held at the end of the evaluation to present preliminary findings to USAID. During this meeting a summary of the data will be presented, along with high level findings and draft recommendations. For the debrief, the Evaluation Team will prepare a **PowerPoint Presentation** of the key findings, issues, and recommendations. The evaluation team shall incorporate comments received from USAID during the debrief in the evaluation report. (*Note: preliminary findings are not final and as more data sources are developed and analyzed these finding may change.*)
- **IP & Stakeholders' debrief/workshop** will be held with the EPT2 implementing partners and other stakeholders identified by USAID. This will occur following the final debrief with USAID/GH, and will not include any information that may be procurement deemed sensitive or not suitable by USAID

#### **Fieldwork, Site Visits and Data Collection:**

The Evaluation team will conduct a minimum of three field visits to countries with significant EPT2 investments. Country visits will be approximately one week in length and include discussion with USAID staff, visits with host country officials and other donors, and site visits, as appropriate.

**Evaluation/Analytic Report** – The Evaluation/Analytic Team under the leadership of the Team Lead will develop a report with findings and recommendations (see Analytic Report below). Report writing and submission will include the following steps:

1. Team Lead will submit draft evaluation report to GH Pro for review and formatting
2. GH Pro will submit the draft report to USAID
3. USAID will review the draft report in a timely manner, and send their comments and edits back to GH Pro
4. GH Pro will share USAID's comments and edits with the Team Lead, who will then do final edits, as needed, and resubmit to GH Pro
5. GH Pro will review and reformat the final Evaluation/Analytic Report, as needed, and resubmit to USAID for approval.
6. Once Evaluation Report is approved, GH Pro will re-format it for 508 compliance and post it to the DEC.

The Evaluation Report **excludes** any **procurement-sensitive** and other sensitive but unclassified (**SBU**) information. This information will be submitted in a memo to USAID separate from the Evaluation Report.

**Data Submission** – All quantitative data will be submitted to GH Pro in a machine-readable format (CSV or XML). The datasets created as part of this *evaluation* must be accompanied by a data dictionary that includes a codebook and any other information needed for others to use these data. It is essential that the datasets are stripped of all identifying information, as the data will be public once posted on USAID Development Data Library (DDL).

Where feasible, qualitative data that do not contain identifying information should also be submitted to GH Pro.

### XIII. DELIVERABLES AND PRODUCTS

Select all deliverables and products required on this analytic activity. For those not listed, add rows as needed or enter them under “Other” in the table below. Provide timelines and deliverable deadlines for each.

Deliverable / Product	Timelines & Deadlines (estimated)
■ Launch briefing	May 31, 2017
■ In-brief with USAID	June 12, 2017
■ Workplan and methodology review briefing	June 19, 2017
■ Workplan (must include questions, methods, timeline, data analysis plan, and instruments)	June 21, 2017
■ 2 country visits (Uganda & Vietnam)	Late June/Early July and early/mid-September, respectively
■ Regular check-in with USAID POCs and technical POCs	Biweekly
■ Out-brief with USAID with Power Point presentation	October 6, 2017
■ Draft report	Submit to GH Pro: October 13, 2017 GH Pro submits to USAID: October 20, 2017
■ Final report	Submit to GH Pro: November 10, 2017 GH Pro submits to USAID: November 16, 2017
■ Raw data (cleaned datasets in CSV or XML with data dictionary)	October 13, 2017
■ Report Posted to the DEC	December 21, 2017
■ Other (specify): Share draft report with EPT2 implementing partners for their review and feedback (written or verbal).	TBD

#### Estimated USAID review time

Average number of business days USAID will need to review deliverables requiring USAID review and/or approval? 15 Business days

### XIV. TEAM COMPOSITION, SKILLS AND LEVEL OF EFFORT (LOE)

**Evaluation/Analytic team:** When planning this analytic activity, consider:

- Key staff should have methodological and/or technical expertise, regional or country experience, language skills, team lead experience and management skills, etc.
- Team leaders for evaluations/analytics must be an external expert with appropriate skills and experience.
- Additional team members can include research assistants, enumerators, translators, logisticians, etc.
- Teams should include a collective mix of appropriate methodological and subject matter expertise.
- Evaluations require an Evaluation Specialist, who should have evaluation methodological expertise needed for this activity. Similarly, other analytic activities should have a specialist with methodological expertise.
- Note that **all team members will be required to provide a signed statement attesting that they have no conflict of interest (COI)**, or describing the conflict of interest if applicable.

Team Qualifications: Please list technical areas of expertise required for this activity:

- List desired qualifications for the team as a whole
- List the key staff needed for this analytic activity and their roles.
- Sample position descriptions are posted on USAID/GH Pro webpage
- Edit as needed GH Pro provided position descriptions

Overall Team requirements:

The evaluation team will be comprised of two to three full-time consultants, one of whom will be the team lead. The evaluation team will also be supported by several other technical subject matter experts who will be available part-time at various points over the life of the project.

**Together, the evaluation team must possess the following skills and qualifications:**

- Experience in evaluating infectious disease/public health programs in developing country settings (particularly emerging infectious diseases and zoonotic pathogens).
- Experience/skills in monitoring and evaluation (M&E)
- Experience in implementing and/or evaluating capacity-strengthening activities within infectious disease programs.
- Experience/skills and broad understanding of “One Health”
- Broad understanding of the importance of high education institutions in the implementation of One Health approach
- Familiarity with USAID contracting and reporting requirements; policies and initiatives; and tools, such as performance monitoring plans and results frameworks.
- Experience with USAID centrally-managed and mission programming, with knowledge and experience in design and implementation of international health and development programs.
- Expertise in monitoring and evaluation of health and development programs.
- Advanced written and oral communications skills in English.

**Key Staff I: Team Lead:** This person will be selected from among the key staff, and will meet the requirements of both this and the other position. The team lead should have significant experience conducting project evaluations/analytcs.

Roles & Responsibilities: The team leader will be responsible for (1) providing team leadership; (2) managing the team’s activities, (3) ensuring that all deliverables are met in a timely manner, (4) serving as a liaison between the USAID and the evaluation/analytic team, and (5) leading briefings and presentations.

Qualifications:

- Minimum of 10 years of experience in public health, which included experience in implementation of health activities in developing countries
- Demonstrated experience leading health sector project/program evaluation/analytcs, utilizing both quantitative and qualitative methods
- Excellent skills in planning, facilitation, and consensus building
- Excellent interpersonal skills, including experience successfully interacting with host government officials, civil society partners, and other stakeholders
- Excellent skills in project management
- Excellent organizational skills and ability to keep to a timeline
- Good writing skills, with extensive report writing experience
- Experience working in the regions (Africa and Asia)
- Experience in design and implementation of evaluations
- Strong knowledge, skills, and experience in qualitative and quantitative evaluation tools

- Experience implementing and coordinating others to implement surveys, key informant interviews, focus groups, observations and other evaluation methods that assure reliability and validity of the data.
- Able to analyze quantitative and qualitative data
- Experience using analytic software
- Able to review, interpret and reanalyze as needed existing data pertinent to the evaluation
- Strong data interpretation and presentation skills
- An advanced degree in public health, evaluation or research or related field
- Familiarity with USAID health programs/projects, primary public health or health systems preferred
- Familiarity with USAID M&E policies and practices
  - Evaluation policies
  - Results frameworks
  - Performance monitoring plans

### **Key Staff 2 Title: Emerging Infectious Disease Specialist**

**Roles & Responsibilities:** Serve as a member of the evaluation team, providing technical expertise to evaluate infectious disease activities; specifically emerging infectious diseases.

#### **Qualifications:**

- Ph.D. or other advanced degree in medicine, veterinary medicine, or a related field from an accredited college or university with a strong biomedical scientific/research background
- At least 10 years of international development experience with a focus on how scientific investigation can be applied to public and or animal health, epidemiology, disease surveillance, veterinarian services/sciences, ecology, behavioral and/or risk mitigation.
- Within that 10 years, at least 5 years' experience in project management
- Previous experience with emerging pandemic threats (to include avian influenza and Ebola) desirable
- Previous experience with cross-sectoral coordination of "One Health" activities desirable

### **Key Staff 3 Title: One Health Specialist**

**Roles & Responsibilities:** Serve as a member of the evaluation team, providing technical expertise to evaluate infectious disease activities; specifically emerging infectious diseases.

#### **Qualifications:**

- An advanced degree in higher education, economics, international affairs, public health, animal health, or other related field from an accredited college or university;
- At least 7 years of experience working on infectious disease or other OH-related issues, preferably within the context of a college or university;
- Previous experience implementing or evaluating activities focused on strengthening the institutional capacity of higher education institutions and/or university networks in developing country settings, preferably in Southeast Asia and/or Africa;
- Demonstrated understanding of the role higher education in developing the health workforce in developing country settings; and
- Knowledgeable on latest evaluation methodologies and approaches.

**Key Staff 4 Title M&E Expert (1 consultant)**

Roles & Responsibilities: Serve as a member of the assessment team, providing quality assurance on survey issues, including methods, development of data collection instruments, protocols for data collection, data management and data analysis. S/He is the lead analyst and will coordinate the analysis of all data, assuring all quantitative and qualitative data analyses are done to meet the needs for this evaluation. S/He will participate in all aspects of the assessment, from planning, data collection, data analysis to report writing.

Qualifications:

- At least 10 years of experience in USAID M&E procedures and implementation
- At least 5 years designing and managing M&E, including assessments, evaluations, or field-based research
- Strong knowledge, skills, and experience in qualitative and quantitative data collection tools
- Experience implementing and coordinating others to implement surveys, key informant interviews, focus groups, observations and other methods that assure reliability and validity of the data.
- Experience in data management
- Able to analyze quantitative, which will be primarily descriptive statistics
- Able to analyze qualitative data
- Experience with database software used for data collection/entry and data analysis, preferably web-based and/or utilizing mobile technology
- Demonstrated experience using qualitative evaluation methodologies, and triangulating with quantitative data
- Strong data interpretation and presentation skills
- Proficient in English
- Good writing skills, including extensive report writing experience
- Familiarity with USAID health programs/projects, primary health care or health systems strengthening preferred

**Other Staff Titles with Roles & Responsibilities (include number of individuals needed):**

**Infectious disease specialist with monitoring and evaluation expertise**

Will USAID participate as an active team member or designate other key stakeholders to as an active team member? This will require full time commitment during the evaluation or analytic activity.

Yes – If yes, specify who:

Significant Involvement anticipated – If yes, specify who: USAID contacts listed in section XVIII

No

**Staffing Level of Effort (LOE) Matrix:**

This LOE Matrix will help you estimate the LOE needed to implement this analytic activity. If you are unsure, GH Pro can assist you to complete this table.

- a) For each column, replace the label "Position Title" with the actual position title of staff needed for this analytic activity.
- b) Immediately below each staff title enter the anticipated number of people for each titled position.
- c) Enter Row labels for each activity, task and deliverable needed to implement this analytic activity.

- d) Then enter the LOE (estimated number of days) for each activity/task/deliverable corresponding to each titled position.
- e) At the bottom of the table total the LOE days for each consultant title in the 'Sub-Total' cell, then multiply the subtotals in each column by the number of individuals that will hold this title.

**Level of Effort in days for each Evaluation/Analytic Team member**

*(The following is an illustrative LOE Chart. Please edit to meet the requirements of this activity.)*

Activity / Deliverable		Evaluation Team				
		Team Lead	Infectious Disease Specialist 1	Infectious Disease Specialist 2	Logistics Coordinator Uganda	Logistics Coordinator Vietnam
1	Launch Briefing	0.5	0.5	0.5		
2	HTSOS Training					
3	Desk review	10	10	10		
4	Preparation for Team convening in-country					
5	Travel to DC (RT)	2		2		
6	In-brief with Mission	0.5	0.5	0.5		
7	Team Planning Meeting	5	5	5		
8	Workplan and methodology briefing with USAID	0.5	0.5	0.5		
9	Eval planning deliverables: 1) workplan with timeline analytic protocol (methods, sampling & analytic plan); 2) data collection tools					
10	In-brief with project	0.5	0.5	0.5		
11	Data Collection DQA Workshop (protocol orientation/training for all data collectors)					
12	Prep / Logistics for Site Visits	2	2		3	2
13	Data collection / Site Visits (including travel to countries)	51	51	9	5	2
14	Data analysis	5	5	5		
15	Travel to DC (RT)	2		2		
16	Debrief with Mission with prep	2	2	2		
17	Stakeholder debrief workshop with prep	1	1	1		
18	Draft report(s)	10	8	8		
19	GH Pro Report QC Review & Formatting					
20	Submission of draft report(s) to Mission					
21	USAID Report Review					
22	Revise report(s) per USAID comments	3	2	2		
23	Finalize and submit report to USAID					
24	USAID approves report					
25	Final copy editing and formatting					
26	508 Compliance editing					
	Eval Report(s) to the DEC					
	Total LOE	95	88	44	8	4

If overseas, is a 6-day workweek permitted  Yes  No

**Travel anticipated:** List international and local travel anticipated by what team members.

The evaluation will primarily be done in the U.S. (Washington D.C.). Two members of the evaluation

team will additionally conduct site visits to two countries (Uganda and Vietnam) that have an established EPT2 program, with all projects represented.

**XV. LOGISTICS**

Visa Requirements –*Not applicable*

List any specific Visa requirements or considerations for entry to countries that will be visited by consultant(s):

--

List recommended/required type of Visa for entry into counties where consultant(s) will work

Name of Country	Type of Visa		
Uganda	<input type="checkbox"/> Tourist	<input type="checkbox"/> Business	<input type="checkbox"/> No preference
Vietnam	<input type="checkbox"/> Tourist	<input type="checkbox"/> Business	<input type="checkbox"/> No preference
	<input type="checkbox"/> Tourist	<input type="checkbox"/> Business	<input type="checkbox"/> No preference
	<input type="checkbox"/> Tourist	<input type="checkbox"/> Business	<input type="checkbox"/> No preference

**Clearances & Other Requirements**

**Note:** Most Evaluation/Analytic Teams arrange their own work space, often in conference rooms at their hotels. However, if a Security Clearance or Facility Access is preferred, GH Pro can submit an application for it on the consultant’s behalf.

GH Pro can obtain **Secret Security Clearances** and **Facility Access (FA)** for our consultants, but please note these requests processed through USAID/GH (Washington, DC) can take 4-6 months to be granted, with Security Clearance taking approximately 6 months to obtain. If you are in a Mission and the RSO is able to grant a temporary FA locally, this can expedite the process. If Security Clearance or FA is granted through Washington, DC, the consultant must pick up his/her badge in person at the Office of Security in Washington, DC, regardless of where the consultant resides or will work.

If **Electronic Country Clearance (eCC)** is required prior to the consultant’s travel, the consultant is also required to complete the **High Threat Security Overseas Seminar (HTSOS)**. HTSOS is an interactive e-Learning (online) course designed to provide participants with threat and situational awareness training against criminal and terrorist attacks while working in high threat regions. There is a small fee required to register for this course. [Note: The course is not required for employees who have taken FACT training within the past five years or have taken HTSOS within the same calendar year.]

If eCC is required, and the consultant is expected to work in country more than 45 consecutive days, the consultant may be required complete the one week **Foreign Affairs Counter Threat (FACT) course** offered by FSI in West Virginia. This course provides participants with the knowledge and skills to better prepare themselves for living and working in critical and high threat overseas environments. Registration for this course is complicated by high demand (consultants must register approximately 3-4 months in advance). Additionally, there will be the cost for additional lodging and M&IE to take this course.

Check all that the consultant will need to perform this assignment, including USAID Facility Access, GH Pro workspace and travel (other than to and from post).

- USAID Facility Access (FA)  
Specify who will require Facility Access: \_\_\_\_\_
- Electronic County Clearance (ECC) (International travelers only)
  - High Threat Security Overseas Seminar (HTSOS) (required in most countries with ECC)
  - Foreign Affairs Counter Threat (FACT) (for consultants working on country more than 45 consecutive days)

- GH Pro workspace  
Specify who will require workspace at GH Pro: \_\_\_\_\_
- Travel -other than posting (specify): \_\_\_\_\_
- Other (specify): \_\_\_\_\_

Specify any country-specific **security concerns and/or requirements**

## **XVI. GH PRO ROLES AND RESPONSIBILITIES**

GH Pro will coordinate and manage the evaluation/analytic team and provide quality assurance oversight, including:

- Review SOW and recommend revisions as needed
- Provide technical assistance on methodology, as needed
- Develop budget for analytic activity
- Recruit and hire the evaluation/analytic team, with USAID POC approval
- Arrange international travel and lodging for international consultants
- Request for country clearance and/or facility access (if needed)
- Review methods, workplan, analytic instruments, reports and other deliverables as part of the quality assurance oversight
- Report production - If the report is public, then coordination of draft and finalization steps, editing/formatting, 508ing required in addition to and submission to the DEC and posting on GH Pro website. If the report is internal, then copy editing/formatting for internal distribution.

## **XVII. USAID ROLES AND RESPONSIBILITIES**

Below is the standard list of USAID's roles and responsibilities. Add other roles and responsibilities as appropriate.

### **USAID Roles and Responsibilities**

**USAID** will provide overall technical leadership and direction for the analytic team throughout the assignment and will provide assistance with the following tasks:

#### **Before Field Work**

- SOW.
  - Develop SOW.
  - Peer Review SOW
  - Respond to queries about the SOW and/or the assignment at large.
- Consultant Conflict of Interest (COI). To avoid conflicts of interest or the appearance of a COI, review previous employers listed on the CV's for proposed consultants and provide additional information regarding potential COI with the project contractors evaluated/assessed and information regarding their affiliates.
- Documents. Identify and prioritize background materials for the consultants and provide them to GH Pro, preferably in electronic form, at least one week prior to the inception of the assignment.
- Local Consultants. Assist with identification of potential local consultants, including contact information.
- Site Visit Preparations. Provide a list of site visit locations, key contacts, and suggested length of visit for use in planning in-country travel and accurate estimation of country travel line items costs.
- Lodgings and Travel. Provide guidance on recommended secure hotels and methods of in-country travel (i.e., car rental companies and other means of transportation).

**During Field Work** - *N/A. Site visits will not be needed for this evaluation*

- **Mission Point of Contact.** Throughout the in-country work, ensure constant availability of the Point of Contact person and provide technical leadership and direction for the team's work.
- **Meeting Space.** Provide guidance on the team's selection of a meeting space for interviews and/or focus group discussions (i.e. USAID space if available, or other known office/hotel meeting space).
- **Meeting Arrangements.** Assist the team in arranging and coordinating meetings with stakeholders.
- **Facilitate Contact with Implementing Partners.** Introduce the analytic team to implementing partners and other stakeholders, and where applicable and appropriate prepare and send out an introduction letter for team's arrival and/or anticipated meetings.

**After Field Work** *N/A. Site visits will not be needed for this evaluation*

- **Timely Reviews.** Provide timely review of draft/final reports and approval of deliverables.

## **XVIII. ANALYTIC REPORT**

Provide any desired guidance or specifications for Final Report. (See *How-To Note: Preparing Evaluation Reports*)

The **Evaluation/Analytic Final Report** must follow USAID's Criteria to Ensure the Quality of the Evaluation Report (found in Appendix I of the [USAID Evaluation Policy](#)).

- The report should not exceed **30-35 pages** (excluding executive summary, table of contents, acronym list and annexes).
- The structure of the report should follow the Evaluation Report template, including branding found [here](#) or [here](#).
- Draft reports must be provided electronically, in English, to GH Pro who will then submit it to USAID.
- For additional Guidance, please see the Evaluation Reports to the How-To Note on preparing Evaluation Draft Reports found [here](#).

**USAID Criteria to Ensure the Quality of the Evaluation Report (USAID ADS 201):**

- Evaluation reports should be readily understood and should identify key points clearly, distinctly, and succinctly.
- The Executive Summary of an evaluation report should present a concise and accurate statement of the most critical elements of the report.
- Evaluation reports should adequately address all evaluation questions included in the SOW, or the evaluation questions subsequently revised and documented in consultation and agreement with USAID.
- Evaluation methodology should be explained in detail and sources of information properly identified.
- Limitations to the evaluation should be adequately disclosed in the report, with particular attention to the limitations associated with the evaluation methodology (selection bias, recall bias, unobservable differences between comparator groups, etc.).
- Evaluation findings should be presented as analyzed facts, evidence, and data and not based on anecdotes, hearsay, or simply the compilation of people's opinions.
- Findings and conclusions should be specific, concise, and supported by strong quantitative or qualitative evidence.
- If evaluation findings assess person-level outcomes or impact, they should also be separately

assessed for both males and females.

- If recommendations are included, they should be supported by a specific set of findings and should be action-oriented, practical, and specific.

**Reporting Guidelines:** The draft report should be a comprehensive analytical evidence-based evaluation/analytic report. It should detail and describe results, effects, constraints, and lessons learned, and provide recommendations and identify key questions for future consideration. The report shall follow USAID branding procedures. ***The report will be edited/formatted and made 508 compliant as required by USAID for public reports and will be posted to the USAID/DEC.***

The findings from the evaluation/analytic will be presented in a draft report at a full briefing with USAID and at a follow-up meeting with key stakeholders. The report should use the following format:

- Abstract: briefly describing what was evaluated, evaluation questions, methods, and key findings or conclusions (not more than 250 words)
- Executive Summary: summarizes key points, including the purpose, background, evaluation questions, methods, limitations, findings, conclusions, and most salient recommendations (2-5 pages)
- Table of Contents (1 page)
- Acronyms
- Evaluation/Analytic Purpose and Evaluation/Analytic Questions: state purpose of, audience for, and anticipated use(s) of the evaluation/assessment (1-2 pages)
- Project [or Program] Background: describe the project/program and the background, including country and sector context, and how the project/program addresses a problem or opportunity (1-3 pages)
- Evaluation/Analytic Methods and Limitations: data collection, sampling, data analysis and limitations (1-3 pages)
- Findings (organized by Evaluation/Analytic Questions): substantiate findings with evidence/data
- Conclusions
- Recommendations
- Annexes
- Annex I: Evaluation/Analytic Statement of Work
- Annex II: Evaluation/Analytic Methods and Limitations ((if not described in full in the main body of the evaluation report)
- Annex III: Data Collection Instruments
- Annex IV: Sources of Information
  - List of Persons Interviews
  - Bibliography of Documents Reviewed
  - Databases
  - [etc.]
- Annex V: Statement of Differences (if applicable)
- Annex VI: Disclosure of Any Conflicts of Interest
- Annex VII: Summary information about evaluation team members, including qualifications, experience, and role on the team.

**The evaluation methodology and report will be compliant with the [USAID Evaluation Policy](#) and [Checklist for Assessing USAID Evaluation Reports](#)**

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The Evaluation Report should **exclude** any **potentially procurement-sensitive information**. As

needed, any procurement sensitive information or other sensitive but unclassified (SBU) information will be submitted in a memo to USIAD separate from the Evaluation Report.

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All data instruments, data sets (if appropriate), presentations, meeting notes and report for this evaluation/analysis will be submitted electronically to the GH Pro Program Manager. All datasets developed as part of this evaluation/assessment/analytic activity will be submitted to GH Pro in an unlocked machine-readable format (CSV or XML). The datasets must not include any identifying or confidential information. The datasets must also be accompanied by a data dictionary that includes a codebook and any other information needed for others to use these data. Qualitative data included in this submission should not contain identifying or confidential information. Category of respondent is acceptable, but names, addresses and other confidential information that can easily lead to identifying the respondent should not be included in any quantitative or qualitative data submitted.

**XIX. OTHER REFERENCE MATERIALS**

Documents and materials needed and/or useful for consultant assignment, that are not listed above

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**XX. ADJUSTMENTS MADE IN CARRYING OUT THIS SOW AFTER APPROVAL OF THE SOW (To be completed after Assignment Implementation by GH Pro)**

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# ANNEX II. EVALUATION/ANALYTIC METHODS AND LIMITATIONS

## EVALUATION TEAM

A three-person multidisciplinary team worked on this evaluation from June 19 to October 4, 2017. Constance A. Carrino, Ph.D., led the team; Daniel R. Lucey, M.D, M.P.H., was the senior emerging infectious disease specialist, and Marguerite Pappaioanou, D.V.M., P.P.V.M., Ph.D., was the senior OH/veterinary specialist. Please see Annex VII for summary biographies of each of these evaluation team members.

Elements of the evaluation methodology included:

- Briefings, review of official agreement documents, technical reports and other publications, and a literature review.
- Informational-specific or in-depth interviews conducted by the team with 192 stakeholders, including AORs and members of the USAID project team, implementing partners, government and university counterparts in EPT2 countries, USG counterparts, and U.S. and international collaborators and experts in OH and research. Most contacts were provided by ETD; however, the evaluation team also compiled a list of additional outside experts to consult (Guidelines for interviews appear in Annex III). All respondents were assured that their answers would be kept confidential, not be attributed, and that they could stop the interview or survey at any time. The statement provided to potential respondents appears with each instrument in Annex VI.
- Two SurveyMonkey surveys, one of EPT2 and GHSA POCs in countries about EPT2's contributions to GHSA and one of EPT2 in-country government and university counterparts about the program's contributions to their countries' ability to prevent, detect, and respond to emerging pandemic diseases using a OH approach. Nineteen of the 32 USAID POCs and advisors responded to the EPT2/GHSA POC survey, and 42 government and university counterparts from nine EPT2 countries responded to the government/university survey. While some general indications of preference were apparent in the answers, respondents' comments were the most useful aspect from both surveys. Both Africa and Asia respondents were represented in both sets of survey responses. (Instruments are provided in Annex V.)
- Country visits by two team members to Uganda (July 10-14, 2017) and Vietnam and Thailand (September 5-15, 2017). The team also held country-specific calls in selected countries on key areas of EPT2 activity. For these visits and calls, Mission EPT2 or GHSA POCs helped identify relevant stakeholders to be interviewed, including Mission, partner, and other donor representatives, government officials, and academics. In Uganda and Thailand, the team interviewed both country and regional EPT2 and partner representatives.
- Issue-specific calls to program personnel and country counterparts in four additional countries: EPT2 experience with outbreaks (Cameroon, DRC), disease surveillance (Bangladesh), and sustaining OH networks (Indonesia).

## USAID Preparation/Assistance

Aside from the SOW prepared by USAID and reviewed with GH Pro managers and the evaluation team, USAID provided a Google drive with key program documents and an extensive contact list. The USAID

Emerging Health Division held a day-long briefing that included EPT2-specific information and constraints and opportunities within the program.

The USAID POC for the evaluation, Ashna Kibria, set up a bi-weekly phone call with the evaluation team leader and GH Pro assignment manager Lindsay Harnish to track administrative and technical progress during the evaluation. This routine call and USAID involvement was especially useful when planning field visits and field surveys.

### **Limitations**

Although we believe a program this complex would have benefited from a larger evaluation team, the timing of the evaluation and the field visits caused some limitations. Given USAID program requirements, the evaluation needed to begin in June 2017. One team member had previous commitments throughout the summer, which precluded her participation in the field visits. The evaluation team attempted to work around this by scheduling a full five days of team planning at the beginning of the evaluation and holding intermittent calls to discuss findings as they were identified. This helped the team work as one during visits and allowed us to split responsibilities.

USAID Mission schedules moved the Vietnam and Thailand visits into the end of the evaluation period. These countries are among the furthest along and can be used as models—or in our case, yardsticks—for what is possible under EPT2. Thus, it was unfortunate to have those visits occur near the end of the evaluation process.

# ANNEX III. IN-DEPTH AND INFORMATIONAL INTERVIEWS

<b>USAID</b>
<b>EPT2 Evaluation</b>
Ashna Kibria, Public Health Advisor, ETD, USAID Point of Contact for the Evaluation Cassandra Louis Duthil, Program Assistant, ETD
<b>Bureau for Global Health (GH)</b>
Irene Koek, Senior Deputy Assistant Administrator (Acting) Robbin Boyer, Management and Program Elizabeth Fox, Senior Advisor Matt Barnhart, Senior Science Advisor
<b>GH/Office of Health, Infectious Disease and Nutrition (GH/HIDN/ID)</b>
Paul Mahanna, ID Office Director Christina Chappell, Deputy Chief Megan Fotheringham, Deputy Chief Richard Greene, Senior Infectious Disease Strategy Advisor; Lead for GHSA Rob Henry, Senior Public Health Advisor
<b>GH/HIDN/ID/Emerging Threats Division (ETD)</b>
Dennis Carroll, ETD Director Alisa Pereira, Technical Advisor, PREDICT 2 Andrew Clements, Technical Advisor; AOR, PREDICT 2 Tiffany D'Mello, Monitoring and Evaluation Advisor Kendra Chittenden, Lab Technical Advisor Angela Wang, Public Health Advisor Shana Gillette, Risk Mitigation Advisor Amalhin Shek, Budget and Communications Marilyn Crane, Senior International Higher Education Advisor and AOR, OHW Nadira Kabir, AOR, P&R Ricardo Echalar, Technical Advisor; P&R Lindsay Parish, Technical Advisor; AOR, FAO Latoya Armstrong, Donor Coordination Advisor Cara Chrisman, Technical Advisor, Global Virome Project Andrea Long-Wagar, Infectious Disease Advisor; Africa Bureau Liaison Sarah Paige, Infectious Disease Advisor; Africa Bureau Liaison
<b>Africa</b>
Lisa Baldwin, Health Team Division Chief, Africa Bureau, USAID/Washington Sylvia Alford, Health Team, Africa Bureau, USAID/Washington Lisa Kramer, East Africa Regional and Kenya Pandemic Threats Advisory, Nairobi, Kenya Mark Meassick, Director, USAID/Uganda Jo Lesser-Oltheten, Deputy Director, USAID/Uganda

**USAID**

Margaret Sancho, Health and HIV Office Director, USAID/Uganda  
Gregory J. Adams, GHSA Advisor, USAID/Uganda  
Kassahun Abate Belay, Senior Malaria Technology Advisor, USAID/Uganda  
Tamara Chikhradze-Young, West Africa, Ghana  
Mounkaila A. Billo, USAID/GHSA Senior Advisor, Cameroon  
Stephen Wazeh Atanga, USAID/GHSA Specialist, Cameroon

**Asia**

Robin Martz, Deputy Health Director, Regional Development Mission for Asia (RDMA)  
Dr. Sudarat Damrongwatanapokin, Regional Animal Health Advisor, Office of Public Health, RDMA  
Dr. Dan Schar, VMD, Senior Regional Emerging Infectious Diseases Advisor, Office of Public Health, RDMA  
Dr. Anchales Jatapai, Development Assistant Specialist (GHSA), RDMA  
Dr. Oanh Kim Thuy, Health Advisor, USAID/Vietnam  
Dr. Michael O'Leary, Senior Emerging Infectious Disease Advisor, USAID/Vietnam  
Timothy Meinke, Senior Infectious Disease Advisor, Indonesia  
Bambang Heryanto, Avian Pandemic Influenza Specialist, Indonesia  
Dr. Kelly O'Neill, Global Health Security Advisor, Bangladesh

**EPT2 PARTNERS****Food and Agriculture Organization of the United Nations**

Subhash Morzaria, Global Coordinator for EPT2  
Juan Lubroth, Chief Veterinary Officer; Head/Technical (Strategies) Lead of Emergency Center  
Mirela Hasibra, Deputy and Operations Manager, Emergency Centre for Transboundary Animal Disease (ECTAD)  
Wantanee Kalpravidh, Regional Manager, Bangkok  
Peter F. Black, Deputy Regional Manager, Bangkok  
Pawin Padungton, Senior Technical Coordinator, ECTAD, Vietnam  
Nguyen Thi Phuong Oanh, Operations Officer ECTAD, Vietnam  
Yilma Makonnen, ECTAD Regional Manager, Nairobi  
Dr. Sam Okuthe, Regional Epidemiologist, ECTAD Eastern Africa  
Sarah Mubiru, Africa Livestock 2050, Uganda  
Ndyanabo Susan Ntibarikure, National Laboratory Manager, Uganda  
Abdou Salla, Team Leader, FAO/ECTAD, Cameroon  
Eric Brum, Team Leader, ECTAD, Bangladesh

**World Health Organization**

Elizabeth Mumford, Technical Officer, International Health Regulations Division  
Dr. Richard Brown, Programme Manager, Health Emergencies and AMR, Bangkok  
Miriam Nanyunja, DPC Advisor & DPC Cluster Leader/GHSA Counterpart, Uganda  
Tenywa Emmanuel, Immunizations, Uganda  
Collins Mwesigye, Outbreak Response, Uganda  
Felix Ocom, SSA-SPP, Uganda (attached to MOH)  
William Lali Ziras, NPO/Laboratory, Uganda  
Dr. Masaya Kato, Communicable Diseases Group Coordinator, Vietnam

<b>EPT2 PARTNERS</b>
Dr. Satoko Otsu, Team Leader, Emerging Disease Surveillance Response (ESR), Vietnam Dr. Do Thi Hong Hien, Epidemiologist, Communicable Diseases, Vietnam
<b>PREDICT 2</b>
Jonna Mazet, Global Director and Principle Investigator; Chief of Party David Wolking, Technical Operations Manager William (Billy) Karesh, EPT2 Partners Liaison Dr. Supaporn Waharapluesadee, Faculty of Medicine, Chulalongkorn University Dr. Abhinbhen Saraya Wasontiwong, Department of Medicine (Neurology) Dr. Benard Ssebide, Country Head Veterinarian & Uganda Country Coordinator, Gorilla Doctors Amanda Fine, Associate Director for Asia (esp. Mongolia; Vietnam), Wildlife Health Program, Wildlife Conservation Society (WCS) Nguyen Thi Thanh Nga, Veterinary Program Officer, WCS Moctar M. Mouiche Mouliom, Director, Metabiota/PREDICT Cameroon Matthew Lebreton, Senior Advisor, Metabiota/PREDICT Cameroon
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<b>One Health Workforce (OHW)</b>
Jeff Bender, Director Katey Pelican, Lead Africa Team Innocent Rwego, Regional Program Manager for Central and East Africa
<b>One Health Central and East Africa (OHCEA)</b>
Dr. William Bazeyo, Dean, College of Health Sciences, School of Public Health, Makerere University (MU) Prof. John David Kabasa, Principal, College of Veterinary Medicine, Animal Resources & Biosecurity (COVAB), MU Irene Naigaga, Regional Program Manager Dr. Peninah Nsamba, Faculty Focal Point from School of Public Health (SOPH), MU Dr. Ester Buregyeya, Faculty Focal Point from Veterinary Sciences, MU Atianjoh W. Asonoh, Veterinary student from Cameroon, MU Kizito Kakule, Wildlife Management student from DRC, MU Namata Jessica, SOPH recent graduate, MU Mawejje Charles, SOPH recent graduate, MU
<b>Thailand Southeast Asia One Health University Networks (SEAOHUN)</b>
Dr. Vipat Kuruchittham, Executive Director Dr. Lertrak Srikitjakarm, Chairman of SEAOHUN Foundation Ratsuda Poolsuk, Program Coordinator
<b>Vietnam One Health University Network (VOHUN)</b>
Pham Duc Phuc, Ph.D. Coordinator Trinh Dinh Thau, Ph.D., Dean, Faculty of Veterinary Medicine, Vietnam National University of Agriculture Prof. Nguyen Thi Thuy Hanh, MD. Ph.D., Associate Professor, Deputy Head of Demography & Head of Training, Scientific Management and International Cooperation Department, Hanoi Medical University
<b>Faculty/trainers</b>
Do Thi Thanh Toan, Hanoi Medical University Tran Thi Tuyet Hanh, Environmental Health

**EPT2 PARTNERS**

Pham Phuong Mai

Tran Tuyet Trinh

**Hanoi Medical University, Masters of Public Health Students**

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**Preparedness and Response (P&R)**

Susan Scribner, Director

Katie Taratus, Deputy Director

Solomon N Benigno, Jr., Regional OH Advisor, Animal Health, Asia

Pasakorn Akarasewi, MD, South East Asia Regional Director

Sara Lehman, Regional Operations & Communication Manager, Bangkok

Andrew Kitua, Regional Director for East and Central Africa (ECA)

David Mutonga, Regional One Health Technical Advisor, ECA

Dr. Winyi R. Kaboyo, National One Health Advisor, Uganda

Dr. Samuel Muriuki, Regional OH Advisor, ECA and Country Manager for Ethiopia and Tanzania

Boaz Turnwesigye, Regional Coordinator, ECA

Patrick Onen, Finance and Accounting Manager, Uganda

Ha Le Thanh, P&R Focal Point for Vietnam

Mr. Asfri, P&R lead, Indonesia

Ms. Rani, P&R Indonesia

Serin Loul, Technical Advisor One Health, Cameroon

**OTHER PARTNERS****CDC**

Maureen Bartee, Director GHSA, Division of Global Health Security

Casey Barton Behravesh, Director, One Health Office

Joel Montgomery, Chief, Epidemiology, Laboratory and Surveillance Branch, Global Disease Detection Division

Vance Brown, GHSA Lead, Uganda

Joco Homsy, GHSA, Uganda

Dr John MacArthur, Director CDC Thailand

Dr. Ong-Orn Prasarnphanich, Director, Animal-Human Interface Program

Omer Pasi, Director CDC/GHSA Cameroon

**U.S. Department of Defense (DOD)**

Lance Brown, Division Chief (CBEP), Defense Threat Reduction Agency (DTRA), DOD Cooperative Biological Engagement Group; acting DTRA Chief

Ian Watson, Deputy CBEP/DTRA, Senior Operations Manager

Jean Richards, International Cooperation Officer (bio engagement; CDC, GHSA, FAO)

Monica Millard, U.S. Military HIV Research Program, MHRP Program Director, Uganda

Derrick Mimbe, Makerere University Walter Reed Project, Program Manager, EID Program, Uganda

**World Bank**

John Paul Clark, Senior Health Specialist GHNDR; Lead REDISSE Project - West Africa

Caroline Plante, Senior Livestock Specialist, GHNDR; REDISSE Project

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<b>Other International Experts</b>
Beth Cameron, former National Security Council GHSA lead Samuel Scheiner, Co-Program Officer for Ecology of Infectious Diseases Program, Division of Environmental Biology, National Science Foundation August Pabst, former P&R AOR
<b>Indonesia</b>
Ms. Nurbaiti, Coordinating Ministry of Human Development and Culture (PMK) Dr. Pebi, Government of Indonesia Ministry of Agriculture, GHSA focal point
<b>Thailand</b>
Dr. Richard Lee, Regional Program Manager, ASEAN Mission, Australian Embassy Dr. Thangthong Patchimasiri, Veterinarian, expert level (pathology; biosafety and biosecurity), National Institute for Animal Health (NIAH)/Department of Livestock Development (DLD) Dr. Manche, NIAH/DLD Dr. Tuangthong Patchimasiri, Senior Veterinary Expert, NIAH/DLD Dr Rungtip, AMR Lab, Chulalongkorn University Dr. Maroon, OH-CU, Ministry of Public Health Dr. Suthida, OH-CU, MOPH
<b>Uganda</b>
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## OTHER PARTNERS

### Vietnam

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David Payne, OHP consultant  
Ms. Nguyen Thu Thuy, Deputy Director General, Department of Animal Health (DAH)  
Mr. Do Huu Dung, Head of Planning Division, Project Coordinator, DAH  
Mr. Pham Thanh Long, Epidemiology Division, DAH  
Ms. Le Thi Hue, Deputy-Head of Veterinary Drug Administration, DAH  
Ms. Hoang Thi Le Phuong, International Cooperation and Communication Division, DAH  
Mr. Nguyen Van Trong, Vice-Director, Department of Livestock Programs, Ministry of Agriculture and Rural Development (DLP/MARD)  
Mr. Do Van Hoan, Deputy Head of Poultry and Small Animal Division, DLP/MARD  
Mr. Chu Dinh Khu, Head of Animal Division, DLP/MARD  
Ms. Pham Thi Kim Dung, Head of Planning & Finance Division, DLP/MARD  
Dr. Vuong Tien Manh, Deputy Director, Vietnam CITES Administration of Forestry, MARD (CITES-MA)  
Nguyen Van Doan, Legal and Enforcement Official, CITES-MA  
Ms. Nguyen Thi Hai, Head of Livestock and Veterinary Extension Division, National Agricultural Extension Center (NAEC)  
Mr. Tran Dac Phu, Director, General Department of Preventive Medicine (GDPM)  
Mr. Pham Hung, Chief, Division of Communicable Diseases Control, GDPM  
Ms. Nguyen Thi Bich Thuy, Border Health Quarantine Division, GDPM  
Mr. Tuyen, Field Epidemiology Training Programme, GDPM  
Ms. Le Thi Hang Nga, GDPM  
Professor, Dang Duc Anh, Ph.D., Director, National Institute of Hygiene and Epidemiology (NIHE)  
Ms. Ha Thi Kim Cuong, Deputy Chief of Nursing Division, Vietnam Administration of Medical Services (VAMS)  
Mr. Tran Ninh, VAMS  
Ms. Doan Quynh Anh, VAMS

## ANNEX IV. SOURCES OF INFORMATION

USAID provided a range of program materials, including contract and reporting documents in the following categories:

1. EPT2 background documents (3 folders)
2. GHSA background materials (6 folders)
3. EPT2 M&E (4)
4. FAO (6 folders)
5. PREDICT (5 folders)
6. One Health Workforce (OHW) (6 folders)
7. Preparedness and Response (P&R) (7 folders)
8. IFRC (1)
9. WHO (5)
10. Supplies and SCM (2 folders)
11. Evaluation Host Government Counterparts (1)
12. KII Contact List – 405 EPT Evaluation (1)

Additional sources consulted include:

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# ANNEX V. DATA COLLECTION INSTRUMENTS

Following are the three instruments used in this evaluation:

- V.1. SurveyMonkey for USAID Field POCs for EPT2 and/or GHSA (referred to as Mission advisors in the text of the report);
- V.2. SurveyMonkey for EPT2 Government and University Counterpoints in Countries; and
- V.3. Interview Guidelines for the EPT2 Evaluation.

## V.1. SurveyMonkey for USAID Field Points of Contact for EPT2 and/or GHSA

*USAID Mission staff working with EPT2 and/or GHSA*

USAID is conducting an evaluation of its Emerging Pandemic Threats 2 (EPT2) program. The goal of EPT2 is to reduce risk and impact of emerging pandemic threats, applying a One Health (OH) approach. This survey focuses on EPT2 contributions to GHSA.

EPT2 implementing partners include: PREDICT 2 (Prime - University of California-Davis); Preparedness and Response (P&R) (Prime – DAI Global); and One Health Workforce (OHW) (Prime – University of Minnesota); the U.N Food and Agriculture Organization (FAO) and the World Health Organization (WHO).

Your participation in this interview is completely voluntary. You may refuse to answer any question in the survey, without repercussion or penalty. Your name is being collected only as an identifier for follow-up and will not be shared beyond the evaluators. Your answers are confidential. We anticipate this survey will take approximately 10 minutes. Continuing with this survey constitutes your consent.

1. Please provide your name, as an identifier for follow-up only.
2. Are you a (check all that apply): USAID Mission staff working with EPT2 and/or GHSA
  - a. EPT Advisor
  - b. EPT POC
  - c. GHSA Advisor
  - d. Health Officer
  - e. Other (please specify)
3. What has been (formerly) or is now (currently) your area of responsibility with GHSA and or EPT? Please provide your title and area of responsibility for each in the space provided:
  - a. GHSA (Currently)
  - b. GHSA (Formerly)
  - c. EPT (Currently)
  - d. EPT (Formerly)
4. When did you begin working with GHSA?
5. When did you become aware of EPT2?

6. When did you begin working with EPT2?
7. What EPT2 partners have you worked with? (Check all that apply)
  - a. PREDICT 2
  - b. Preparedness and Response (P&R)
  - c. One Health Workforce (OHW)
  - d. FAO
  - e. WHO
8. Has EPT2 contributed to fulfilling the objectives of the following GHSA action packages? (Check all that apply)
  - a. Antimicrobial Resistance
  - b. Zoonotic Diseases
  - c. Biosafety and Biosecurity
  - d. Immunization
  - e. National Laboratory System
  - f. Real-Time Surveillance
  - g. Reporting
  - h. Workforce Development
  - i. Emergency Operations Centers
  - j. Linking Public Health with Law and Multisectoral Rapid Response
  - k. Medical Countermeasures and Personnel Deployment Package

For any Action Packages checked above, please give an example
9. From your perspective, are there ways in which EPT2 could contribute further to GHSA? (yes/no)
  - a. If yes, briefly describe how so in the space below. If no, briefly describe how so in the space below
10. Are there any other comments you wish to add?

## **V.2. SurveyMonkey for EPT2 Government and University Counterpoints in Countries**

### *Government and Universities*

USAID is conducting an evaluation of its Emerging Pandemic Threats 2 (EPT2) program. The evaluation reviews whether the objectives of the program are on track, and identifies how the EPT2 program has contributed to the knowledge base, implementation, and sustainability of efforts to prevent, detect and respond to emerging pandemic threats through a One Health approach.

EPT2 implementing partners include: PREDICT 2 (Prime – University of California-Davis); Preparedness and Response (P&R) (Prime – DAI Global); and One Health Workforce (OHW) (Prime – University of Minnesota); the U.N Food and Agriculture Organization (FAO) and the World Health Organization (WHO).

Your participation in this interview is completely voluntary. You may refuse to answer any question in the survey, without repercussion or penalty. Your answers are confidential. We anticipate this interview will take approximately 15 minutes. Continuing with this survey constitutes your consent.

1. Please provide the name of your country:
2. In what capacity have you worked with EPT2 (PREDICT 2, P&R, OHW, WHO, and/or FAO)?

Academia	Government
Medical School/Faculty, Dean	Prime Minister's Office
Medical School/Faculty, Professor/Instructor	Ministry of Health
Medical School/Faculty, Other	Ministry of Agriculture and/or Livestock
Nursing School/Faculty, Dean	Ministry of Natural Resources
Nursing School/Faculty, Professor/Instructor	Ministry of Education
Nursing School/Faculty, Other	Other, specify below
School of Public Health/Faculty, Dean	
School of Public Health/Faculty, Professor/Instructor	
School of Public Health/Faculty, Other	
Veterinary College/School/Faculty, Dean	
Veterinary College/School/Faculty, Professor/Instructor	
Veterinary College/School/Faculty, Other	
Other, specify below	

3. What EPT2 partners do you work with? (Check all that apply)

- a. PREDICT 2
- b. P&R
- c. OHW
- d. FAO
- e. WHO

4. When did you begin working with EPT2?

5. Using a scale from 1-5, please indicate how strongly you agree with the following statements:  
(1: Strongly Disagree – 5: Strongly Agree)

EPT2 (PREDICT 2, P&R, OHW, FAO, and/or WHO) has strengthened my country's capacity for:

Preventing Emerging Pandemic Threats

Detecting Emerging Pandemic Threats

Responding to an Emerging Pandemic Threats outbreak

Please provide comments regarding your rating:

6. Using a scale from 1-5, please indicate how strongly you agree with the following statement:  
(1: Strongly Disagree – 5: Strongly Agree)

EPT2 (PREDICT 2, P&R, OHW, FAO, and/or WHO) has strengthened One Health education and training programs in my country

Please provide comments regarding your rating:

7. Using a scale from 1-5, please indicate how strongly you agree with the following statement:  
(1: Strongly Disagree – 5: Strongly Agree)

In general, as a consequence of this education and training the quality of the workforce in my country to reduce the risk and impact of EPTs, applying a One Health (OH) approach, has been strengthened.

Please provide comments regarding your rating:

8. Using a scale from 1-5, please indicate how strongly you agree with the following statements:  
(1: Strongly Disagree – 5: Strongly Agree)

EPT2 (PREDICT 2, P&R, OHW, FAO, and/or WHO) has strengthened an environment that promotes, facilitates and supports multisectoral collaboration to reduce risk and impact of EPTs, through a One Health (OH) approach

Please provide comments regarding your rating:

9. With respect to your answer in Q7 (above), can you provide an example of how a One Health multisectoral collaboration was strengthened, or how EPT2 (PREDICT 2, P&R, OHW, FAO, and/or WHO) could have more effectively strengthened multisectoral collaboration to reduce risk of Emerging Pandemic Threats through improved prevention, detection, response from a One Health Approach.

10. Using a scale from 1-5, please indicate how strongly you agree with the following statement:  
(1: Strongly Disagree – 5: Strongly Agree)

EPT2 (PREDICT 2, P&R, OHW, FAO, and/or WHO) helped to identify and fill important knowledge gaps to improve the effectiveness of preventing, detecting, and responding to Emerging Pandemic Threats.

Please provide comments regarding your rating:

11. If key gaps remain, briefly describe at least one that you believe is high priority.

### **V.3. Interview Guidelines for EPT2 Evaluation—Universal Listing (July 5, 2017)**

*(Universal listing – Actual areas of questioning will depend on respondent’s relationship with EPT2 or their self-identify area of expertise. Most respondents will be asked about 1,2,9,10 and 11)*

Introduction for all respondents:

USAID is conducting an evaluation of its Emerging Pandemic Threats 2 (EPT2) program.

The overarching program goal is to “reduce the risk and impact of emerging pandemic threats, applying a One Health approach.” The evaluation will review whether the objectives of the program are on track for completion, and identify how the EPT2 program has contributed to the knowledge base, implementation and sustainability of efforts to prevent, detect and respond to emerging pandemic threats, through a “One Health” approach. It will cover how EPT2 has engaged or coordinated with international organizations, donors, and technical partners, and the contribution of the EPT2 program in achieving the objectives of Global Health Security Agenda (GHSA.)

Your participation in this interview is completely voluntary. You may refuse to answer any question in the interview or stop the interview at any time, without repercussion or penalty. All information being collected will be kept confidential. No personal identifying information is being collected. Of course,

your answers are confidential. We will be taking notes for reference later Do we have your permission to begin?

1. **What is your role** and area of responsibility? Do you now, or have you previously, worked with the EPT2 program or its predecessor programs?
2. **Which EPT2 projects or activities have you worked on (or with)?** (e.g. PREDICT (Prime - University of California-Davis), Preparedness and Response (P&R) (Prime - DAI Global), and One Health Workforce (OHW) (Prime - University of Minnesota), as well as agreements with WHO and FAO. Please describe your experience.
3. **Field response to a zoonotic outbreak and EPT2 involvement**
  - 3.a. How long has your country been involved with the EPT (EPT1; EPTplus; EPT2) program?
  - 3.b. Can you give an example of a field response to a zoonotic outbreak involving EPT2 that occurred in your country?
  - 3.c. Did you receive any assistance or support from the EPT2 program before, during, and or after the outbreak? [PROMPT: EPT2 projects include PREDICT, P&R, FAO, OHW, and in many cases the stakeholders may mention a specific project rather than program; EPT2 supportive role in Incident Command or Risk Communication or Community Engagement]
  - 3.d. What animal and human populations were involved in the outbreak, and were multiple sectors involved in detection, confirmation, and response within and between sectors, and if so, how—please provide details?
  3. e. Describe the day to day management of the response. Who was involved, was there an “Incident Command” coordinating structure or other structure in place?
  - 3.f. What, if any, protocols were used (e.g. to test for the pathogen(s) causing the outbreak, investigating the outbreak, implementing risk mitigation activities?) Were they written? [PROMPT: for roles and responsibilities of different sectors, decision making, lines of authority, channels and timing of communication within or between sectors]? Examples. [Get written copy.]
  - 3.g. Did the protocols change during or after the field response to the outbreak?
  - 3.h. Was there community risk communication in place during or after the outbreak? Who participated in developing the message? Who finalized the messages that were communicated?
  - 3.i. Did community leaders support the effort? If so, how? How were they engaged?
  - 3.j. How are media messages during or following an outbreak developed? Who is involved in that development? Who finalizes the messages?
  - 3.k. Did the field response team conduct a post outbreak review to emphasize lessons learned? Who was a part of that process?
4. **Laboratory capacity**
  - 4.a. What is the protocol to identify the cause of an outbreak if infectious? If non-infectious (e.g. chemical or toxin)?
  - 4.b. What is the protocol for how to identify an **unknown** cause of an outbreak (when all the routine tests are negative)?

4.c. In general, how much time is usually required to get an initial result? A confirmatory result?

4.d. Do human and veterinary laboratories collaborate, and if so, in what ways?

4.e. Has EPT2 strengthened the country's capacity to provide laboratory confirmation of potential zoonotic EPTs? If so, how? If not, what aspects need further strengthening?

4.f. Has EPT2 provided Bio-safety and Security trainings or supplies and/or reagents? Amplify.

4.g. Does EPT2 aliquot samples to be tested in country and outside the country to test for reproducibility?

## 5. "One Health" networks

5.a. What kind of coordination exists between human health, animal (including livestock and wildlife) health, environment and other sector officials (i.e., transportation) to **plan, prepare, investigate and respond** to zoonotic disease outbreaks?

5.b. Is there a One Health network [NOTE: respondent may have another name for the group – use their name] in **Country X**? If so,

5.c. How did it develop? Who are the members? Ask about One Health Strategies or relevant policies.

5.d. What is your role in the network? How do you work with colleagues in other sectors?

5.e. Is the network effective? Why or why not? How could the effectiveness of the network improve?

5.f. What support have you/do you receive from the EPT2 program? What other support does the network receive? [e.g. financial, technical, organizational]

## 6. Policy Development and Implementation

6.a. What policies or guidelines are in place at the national or subnational level to strengthen efforts to prevent, detect and respond to emerging pandemic threats, through a "One Health" approach?

6.b. What policy development approaches or tools were used by EPT2 partners in country? [PROMPT: workshops, site visits, simulation models, dashboards, budgets supporting multisectoral collaboration, other?]

6.c. What approaches or tools of EPT2 or others been effective? Explain

6.d. What policy implementation (e.g. guidelines, protocols, legislation) has EPT2 advised or assisted with? Explain

6.e. To what extent are One Health policies and or guidelines supported and adopted by different sectors in country? [PROMPT: which Ministries]

## 7. One Health Workforce (OHW)

7.a. Have you participated in or observed One Health workforce or (name the group – R-OHWH) efforts? If so:

7.b. Who is being taught? (e.g. physicians, medical students, nurses, veterinarians, veterinary students, animal husbandry students, university undergraduate students, laboratory scientists,

environmental science students, other—in service, graduate, pre-service)? (PROMPT: Do universities and courses provide opportunities for students from different disciplines to learn together? What is that experience like? Are relationships sustained over time? Do students continue to collaborate and co-learn?)

7.c. What is being taught? Examples of content (PROMPT: one health competencies, can you provide an example?)

7.d. Who is doing the teaching? What are their areas of expertise? (PROMPT: do faculty from different disciplines, colleges, departments—medical, veterinary, other co-teach?)

7.e. What real-world experience with respect to preventing, detecting or responding to zoonotic disease outbreaks do the students/trainees receive during their training? Explain

7.f. What do you find are the pros and cons of in-service vs. pre-service training for emerging pandemic threats? (PROMPT: for with respect to detecting, preventing, preparedness, or response) Explain.

7.g. What are the roles and relationships between government and universities for developing the OH workforce? Have those perspectives changed?

7.h. What kind of demand is there for OH workforce graduates in the public and private sector?

## 8. Global Health Security Agenda (GHSA)

8.a. How has **Country X** participated in the Global Health Security Agenda?

8.b. What contributions has EPT2 made to achieving GHSA action packages? [PROMPT if they don't know what action packages are: AMR, Zoonotic Diseases, Biosafety and Biosecurity, Immunization, National Laboratory System, Reporting, Workforce Development, Emergency Operations Centers, Linking Public Health with Law and Multisectoral Rapid Response, Medical Countermeasures and Personnel Deployment Package] For example: training, workshops, expanded lab capacity.

8.c. How should EPT2 best be used within the GHSA framework? What should EPT2 be doing that is outside the GHSA framework?

## 9. Sustainability

9.a. How will national efforts to prevent, detect and respond to emerging pandemic threats, through a “One Health” approach be sustained over time? Explain

9.b. EPT2 is a time limited program. How will the support it provided to strengthen One Health approaches be sustained when the program ends?

9.c. What are the top 3 activities that EPT2 conducted that will be absorbed and continued by host country government or other host country university, non-governmental organization, private sector counterparts?

## 10. Knowledge management and technology

10.a. Has EPT2 improved the knowledge about risk in your country or region? Explain. (Possible answers: PREDICT- five viral families; AI in Asia; Endemic in Africa)

10.b. What contributions has EPT2 made to the knowledge base on science of detecting and responding to emerging zoonotic threats (2014-present) from a OH perspective? [e.g. risk identification, management and mitigation]

10.c. What contributions has EPT2 made to the knowledge base for the practice of detecting and responding to emerging zoonotic threats (2014-present) from a OH perspective? [PROMPT: introduction of improved diagnostics, communication programs.]

10.d. What works to successfully get multiple disciplines and sectors to plan and work together on preventing, detecting, responding to EPT outbreaks?]

10.e. What knowledge gaps remain in national efforts to prevent, detect and respond to emerging pandemic threats? [PROMPT: Using a One Health approach, AMR]

10.f. What technological bottlenecks hinder progress in the prevention, detection or response to emerging pandemic threats? [PROMPT: local lab capacity; transmission of data] Did EPT2 help overcome these bottlenecks?

## **11. Other comments**

11.a. Are there any changes or improvements that come to mind that would improve the program in the coming years?

11.b. What other comments or insights do you have concerning the EPT2 program – as to its goal, whether it is on track to meet its objectives, its contribution to the knowledge base to One Health coordination, or any other comments/insights?

# ANNEX VI. DISCLOSURE OF ANY CONFLICTS OF INTEREST

## GLOBAL HEALTH PROGRAM CYCLE IMPROVEMENT PROJECT

### USAID NON-DISCLOSURE AND CONFLICTS AGREEMENT

#### **USAID Non-Disclosure and Conflicts Agreement- Global Health Program Cycle Improvement Project**

As used in this Agreement, Sensitive Data is marked or unmarked, oral, written or in any other form, "sensitive but unclassified information," procurement sensitive and source selection information, and information such as medical, personnel, financial, investigatory, visa, law enforcement, or other information which, if released, could result in harm or unfair treatment to an individual or group, or could have a negative impact upon foreign policy or relations, or USAID's mission.

Intending to be legally bound, I hereby accept the obligations contained in this Agreement in consideration of my being granted access to Sensitive Data, and specifically I understand and acknowledge that:

1. I have been given access to USAID Sensitive Data to facilitate the performance of duties assigned to me for compensation, monetary or otherwise. By being granted access to such Sensitive Data, special confidence and trust has been placed in me by the United States Government, and as such it is my responsibility to safeguard Sensitive Data disclosed to me, and to refrain from disclosing Sensitive Data to persons not requiring access for performance of official USAID duties.
2. Before disclosing Sensitive Data, I must determine the recipient's "need to know" or "need to access" Sensitive Data for USAID purposes.
3. I agree to abide in all respects by 41, U.S.C. 2101 - 2107, The Procurement Integrity Act, and specifically agree not to disclose source selection information or contractor bid proposal information to any person or entity not authorized by agency regulations to receive such information.
4. I have reviewed my employment (past, present and under consideration) and financial interests, as well as those of my household family members, and certify that, to the best of my knowledge and belief, I have no actual or potential conflict of interest that could diminish my capacity to perform my assigned duties in an impartial and objective manner.
5. Any breach of this Agreement may result in the termination of my access to Sensitive Data, which, if such termination effectively negates my ability to perform my assigned duties, may lead to the termination of my employment or other relationships with the Departments or Agencies that granted my access.
6. I will not use Sensitive Data, while working at USAID or thereafter, for personal gain or detrimentally to USAID, or disclose or make available all or any part of the Sensitive Data to any person, firm, corporation, association, or any other entity for any reason or purpose whatsoever, directly or indirectly, except as may be required for the benefit USAID.
7. Misuse of government Sensitive Data could constitute a violation, or violations, of United States criminal law, and Federally-affiliated workers (including some contract employees) who violate privacy safeguards may be subject to disciplinary actions, a fine of up to \$5,000, or both. In particular, U.S. criminal law (18 USC § 1905) protects confidential information from unauthorized disclosure by government employees. There is also an exemption from the Freedom of Information Act (FOIA) protecting such information from disclosure to the public. Finally, the ethical standards that bind each government employee also prohibit unauthorized disclosure (5 CFR 2635.703).
8. All Sensitive Data to which I have access or may obtain access by signing this Agreement is now and will remain the property of, or under the control of, the United States Government. I agree that I must return all Sensitive Data which has or may come into my possession (a) upon demand by an authorized representative of the United States Government; (b) upon the conclusion of my employment or other relationship with the Department or Agency that last granted me access to

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Sensitive Data; or (c) upon the conclusion of my employment or other relationship that requires access to Sensitive Data.

9. Notwithstanding the foregoing, I shall not be restricted from disclosing or using Sensitive Data that: (i) is or becomes generally available to the public other than as a result of an unauthorized disclosure by me; (ii) becomes available to me in a manner that is not in contravention of applicable law; or (iii) is required to be disclosed by law, court order, or other legal process.

**ACCEPTANCE**

The undersigned accepts the terms and conditions of this Agreement.

Signature

*CACarrino*

Date

*April 24, 2017*

Name

*Constance A. Carrino*

Title

*consultant*

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**ACCEPTANCE**

The undersigned accepts the terms and conditions of this Agreement.

*Daniel R. Lucey, MD*

24 APRIL 2017

Signature

Date

DANIEL R. LUCEY, MD

SENIOR SCHOLAR AND ADJ. PROFESSOR

Name

Title

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**ACCEPTANCE**

The undersigned accepts the terms and conditions of this Agreement.

Signature

*Marquerite Pappadonou*

Date

*4/28/2017*

Name

*Marquerite Pappadonou*

Title

*affiliate Professor,  
University of Washington*

## ANNEX VII. SUMMARY BIOS OF EVALUATION TEAM

**Constance A. Carrino, Ph.D.** (team leader), former director of the Office of HIV/AIDS (OHA), deputy principal for the U.S. President's Emergency Plan for AIDS Relief (PEPFAR); and counselor for development to the U.S. Embassy to Japan.

**Daniel R. Lucey, M.D, M.P.H.**, adjunct professor in the Department of Medicine-Infectious Diseases at Georgetown University and senior scholar and adjunct professor, Georgetown Law School, O'Neill Institute for Global Health Law; and technical curator for Smithsonian Institute National Museum of Natural History 2018-2021 exhibit *Outbreaks: Epidemics in a Connected World*.

**Marguerite Pappaioanou, D.V.M., M.P.V.M., Ph.D.**, affiliate professor, Center for One Health Research, Department of Environmental and Occupational Health Sciences, School of Public Health, University of Washington; and Consultant on Global/One Health. Formerly Executive Director of the Association of American Veterinary Medical Colleges and co-chair of the 2009 National Research Council/Institute of Medicine *Sustaining Global Surveillance and Response to Zoonotic Disease* committee and report.

For more information, please visit

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