

PREVENT

Emerging Pandemic Threats

Quarterly Progress Report January 1-March 31, 2014

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I. Introduction

This document describes PREVENT's activities during the period from January 1, 2014 through March 31, 2014. The contents are organized to reflect PREVENT's systematic investigation of the *human-animal interface* using a framework for emergence that examines three drivers:

1. Social customs/preferences, norms ("Culture");
2. Market system and trade ("Commerce"); and
3. Land-use change.

With a specific mandate to examine risks from EPT pathogens as yet unidentified, the PREVENT work is focused on multi-disciplinary research and communication work attentive to the identified drivers of emerging infectious diseases listed above. Under the Year Five work plan submitted to USAID, the stated key objectives for the project include:

- **An Extractive Industry "Tool Kit":** Completion of on a tool kit that includes assessment tools and mitigation strategies in addition to advocacy materials.
- **Extractive Industry Strategy:** A strategy for engaging extractive industry and for applying the tool kit is validated in two countries (Uganda and possibly Gabon) and ready for roll out to other countries in which Extractive Industry activities will be taking place.
- **The Role of Markets in Disease Emergence and Spread:** Three studies will be completed and serve as the basis of an analysis that will characterize the role of markets in dynamics associated with "spill-over and amplification," as well as provide options for potential intervention strategies.
- **Characterization of "Risk" at the Animal-Human Interface:** A more comprehensive understanding of the dynamics of the animal-human interface and those behaviors that may lead to transmission of zoonotic diseases.
- **Validated BCC Strategies for Nipah Risk Mitigation:** This will be based on a scale-up of the Nipah BCC intervention in Bangladesh.
- **A Cohesive BCC Strategy for EIDs:** Drawing from the BCC lessons arising from the "across the PIOET" exercise in Bangladesh (EPT, EPT Plus, AI.COMM), a strategy will be proposed that could become a model for future country-level BCC programming.

The general objectives of PREVENT's work under both USAID and DFAT funding are to:

1. Determine which subpopulations are at increased risk of contracting and transmitting emerging infectious diseases
2. Understand which factors put them at increased risk
3. Identify and ideally test interventions to address these factors, thereby mitigating the increased risk
4. Connect these findings to a conceptual model for human-animal exposure that accounts for social and epidemiologic factors

These objectives are in line with DFAT's *Pandemics and Emerging Infectious Diseases (EID) Framework, 2010-2015*, which aims to help partner countries build and maintain capacities, systems and protocols in four main areas:

- promoting adherence to international standards of animal and human health
- strengthening systems for the prevention, detection and control of EIDs
- responding to outbreaks of EIDs when they occur
- building an evidence base for the response to EIDs

PREVENT activities are currently funded by USAID and the Australian Government's Department of Foreign Affairs and Trade (DFAT). Activities supported by DFAT focus on community-based activities in the Upper Mekong countries region (i.e., Burma/Myanmar, Cambodia, Lao PDR, and Vietnam). Direct costs for activities in Burma/Myanmar are funded by DFAT, notably a special program in collaboration with the UN Food and Agriculture Organization (FAO) focusing on highly pathogenic avian influenza. This also includes the regional response to H7N9 avian influenza across the Upper Mekong countries bordering China.

II. Highlights

The quarter covering 1 January – 31 March 2014 has been one of the busiest of the PREVENT project life-cycle with field research and outreach activities under way, initiated, or wrapping up in Bangladesh, Myanmar, Thailand, Laos, Vietnam, Malaysia, Indonesia, Republic of Congo (ROC), Democratic Republic of Congo (DRC), and Uganda.

During this quarter, the project negotiated and signed 116 consulting contracts, along with 44 contract modifications; 21 purchase orders with one modification; and 119 payments to consultants and vendors. Six protocols were submitted for IRB review.

Some other highlights of the January 1, 2014 – March 31, 2014 time period are as follows:

Cambodia

- PREVENT developed a **protocol for a study on exposure to poultry in Cambodia**, and discussed plans for conducting the study with stakeholders (Ministry of Health, Ministry of Animal Welfare, WHO, FAO, Institut Pasteur du Cambodge). The study is comprised of three sub-studies. The first is a household qualitative study to obtain detailed information about activities involving potentially risky exposure to poultry that may not have been identified previously; the second is a case control study comparing behaviors of sero-positives and -negatives in two villages; and the third is behavior trials to determine if possible alternatives to risky behaviors are feasible and acceptable, and to learn about circumstances and factors that affect those behaviors.
- Dr. Susan Zimicki **gave a presentation on “Reducing exposure to poultry in Cambodia (BCC, risk mitigation & intervention)”** at the Cambodia-Vietnam Bilateral Meeting on H5N1 on March 24-25. PREVENT also **prepared and submitted two manuscripts to peer reviewed journals** on rodent consumption and rodent contact in Khon Kaen, Thailand.

Laos

- The first report based on the **Laos human-animal exposure survey** was made available, and highlighted key findings that illustrate the importance of social factors - such as ethnicity, gender and age - on exposure. These findings included that ethnicity determined how bats were used (e.g., as food vs. bat feces as fertilizer), and that gender influenced activities that led to exposure (e.g., hunting and slaughtering is mostly done by males, while females do most of the butchering/cutting up). The report highlighted the importance of these findings as a foundation to explore strategies to prevent or mitigate zoonotic disease transmission risk in the study area and its communities.
- Staff continued to plan the **rapid appraisal on the interactions of women, and children with rodents and bats in two districts in Laos**. The study protocol and instruments were finalized, FHI 360 IRB approval was obtained, the protocol was submitted for approval by the Lao PDR National Ethics Committee of Public Health, and other logistical preparations were made.
- A review meeting of district market monitors and market administrators who participated in the **Monitoring of Market Biosecurity activity in Laos** was held, and served as a forum for market participants to share their experiences on the market monitoring activity, how the monitoring tools were used, and progress in negotiating and carrying out market improvements. Many of the monitors reported that they observed improvements at each market, including better garbage collection, improved cleaning and hygiene practices, and separating the market toilet areas for men and women. PREVENT also conducted a half-day workshop to provide technical updates to market monitors to help them understand barriers and motivators to changing behaviors, and how to approach markets on making improvements in biosecurity and hygiene. Market monitors also had the opportunity to practice problem-solving approaches (including identifying root causes) that can be used when they discuss potential improvements with market administrators.
- PREVENT staff in Laos provided technical assistance to 10 government staff from the Provincial Health Department of Vientiane Capital to participate in the **Thai-Lao Collaboration on Food Safety**. Three cross-border provinces discussed strategies and criteria to identify and reach out to possible partner markets, restaurants, and hotels operating in these areas that would qualify and meet food safety standards.

Myanmar

- **Under a Plan of Action approved by the Government of Myanmar, PREVENT worked with the Livestock Breeding and Veterinary Department and other stakeholders to develop and implement training of trainers activities to educate three main groups on how to prevent avian influenza and other infectious diseases.** The target groups are: veterinarians, community animal health workers, and poultry farmers; members of the media and government officials who interact with the media; and local officials. PREVENT also developed an avian influenza flip chart to be disseminated at the trainings.

Vietnam

- A working agreement to implement the **Vietnam National Wildlife Farm Registration Pilot Census** was signed by PREVENT and FAO and finalized in January 2014. In collaboration with FAO, Forest, and CITES MA under MARD, PREVENT planned and facilitated three training courses to prepare 87 provincial and district representatives of Forest Protection from 11 Southern provinces and Ho Chi Minh City to conduct the Pilot Census, including data collection, supervision and verification of data, and the use of GPS devices. As of the end of the quarter, FAO was awaiting final government approval to begin the census.
- IRB approval was received for the **Description of Wildlife Farm Practices Research** activity in Vietnam. PREVENT expects to pretest the study tools in An Giang in April 2014. Field data collection will follow.
- As part of the **Vietnam Cross-Border Rat Trade research**, PREVENT pretested the study tools in An Giang, Vietnam and Kandal, Cambodia. Staff also facilitated a two-day training, which was followed by three days of field practice with the data collection instruments.
- Throughout February and March 2014 **PREVENT staff collaborated with FAO on the development of messages and materials on the emerging H7N9 situation** in China and Southeast Asia. FAO and PREVENT staff worked collaboratively on the development and revision of several products on responding to H7N9 in markets, including a brochure, posters, and a frequently asked questions document. PREVENT staff also created matrices of suggested messages and activities for various target groups, and a print materials summary document.

Regional

- Coding of data was completed for the **participatory rapid appraisal on peridomestic rodents in Thailand**. Data analysis is ongoing, and study findings will be written up by September 2014.
- PREVENT began work on a **rapid ethnography of bat guano mining in Thailand**. The ethnography was designed to describe bat and bat guano exposure and perceived health risks among people associated with guano mining, as well as to identify strategies people use (or might be able to use) to mitigate the risk of infection from exposure to bats and bat excreta. FHI 360 IRB approval was obtained and the protocol was submitted to the Khon Kaen IRB.
- The BCC **interventions to prevent Nipah virus in Bangladesh ended as the Nipah season came to a close**. Over the past quarter, project staff conducted 381 meetings with opinion leaders as well as meetings with communities and gachhis (sap collectors) to inform them of the benefit of using banas (skirts) to prevent the spread of Nipah virus through raw date palm sap consumption. As part of the **ongoing NiV research study**, the icddr,b research team conducted the third wave of their qualitative study. This included in-depth interviews with 31 gachhis, 40 community residents and 30 bat hunters to measure the effectiveness of the bana intervention in terms of awareness and knowledge of NiV.

- PREVENT met with the FAO team involved in the **Bangladesh Live Bird Markets Intervention**, and agreed that PREVENT would re-design and print the LBM training manual.
- The concept note for the **Indonesia Market Scoping/Market Characterization research** was finalized and received a waiver from the FHI 360 IRB. The research team also secured plans for mobile data collection that will enable near-real-time data on the type and number of wildlife available in the markets each day, the type and form of domestic animals, and reports (including photographs) on selected aspects of the market environment.
- The **Malaysia human-animal exposure study** was discontinued during this quarter due to overlap between the PREVENT-led study (a qualitative and quantitative assessment exploring people's relationship to animals in the context of social and environmental factors) and a study led by EPT partner PREDICT (a household survey on how emerging disease risk is linked to landscape type in areas close to where PREDICT is conducting a separate animal surveillance activity).

Africa

- **Key informant research and market observations took place in Brazzaville and Dolisie (ROC) and in Kinshasa (DRC) to elucidate the bush meat/live trade and biosecurity practices at markets in those areas.** After a seven-day in-room training and a three-day field practice training, the research team fanned out over eight markets in Brazzaville, two markets in Dolisie, and eight markets in Kinshasa to conduct observations. About 322 interviews were conducted among vendors of bush meats, vendors of live chickens, market managers, representatives of vendor associations, and cleaners. At each market, the team also conducted a one-week vendor stall observation of all bush meat vendors and five live-chicken vendors. At the request of USAID, PREVENT added observation of domestic animals that are sold live in markets where bush meat is sold, and conducted a head count of all live cows, pigs, ducks, goats, sheep, and guinea fowl during each day of observation. A total of 169 vendors of bush meat and 80 live chicken vendors were observed. PREVENT also conducted a three-day "mini exit interview" of 2,080 adults leaving the bush meat sections of each market to help identify the areas where a probabilistic household survey will be carried out.
- PREVENT met several milestones in the **Uganda human-animal exposure study**, including completing data collection, processing, and preliminary analysis of the formative study; making modifications to the protocol and survey sampling based on local knowledge and findings from the formative study; and training the cognitive research team to conduct the cognitive interviewing pre-test.

Global

- **Extractive industry activities** picked up this quarter. FHI 360 negotiated and finalized contracts with both Chatham House and iSOS to revive the IDRAM initiative with the express goal of testing the tools with four mining companies in DRC. PREVENT staff attended a meeting at Chatham House to restart efforts on the IDRAM initiatives. The EI tools were posted on the IAIA web site and distributed to industry representatives for additional feedback. An RFP for assistance on extractive-industry-related activities through September 2015 was posted during the quarter.

- Project outreach via conferences was active as usual. **PREVENT provided support to the annual Prince Mahidol Award Conference in Bangkok, submitted three abstracts for presentation at the American Public Health Association Annual meeting in November, and submitted a proposal to hold a symposium at the American Society for Tropical Medicine and Hygiene annual meeting in November 2014.** The symposium, entitled “How the social dimensions of the human-animal interface affect the risk of emerging infectious disease transmission,” is intended to showcase PREVENT’s series of qualitative and quantitative studies that illustrate how social factors affect the human-animal interface and thus the risk of disease transmission.

III. Major Programmatic Activities and Results

A. Social Customs/Preferences, Norms (“Culture”)

Culture, as a key driver of conditions that favor the emergence and spread of infectious disease, includes the learned attitudes and behaviors that affect how people, pets, livestock and wildlife interact. Work by PREVENT during the past quarter to identify and distinguish high-risk behavior and practices that most commonly result in risky contact between humans and animals includes the following activities:

1. Research

a. Uganda Human-Animal Exposure Study

During this quarter significant progress was made in the Uganda human-animal exposure study, including data collection, processing, and preliminary analysis of the formative study; beginning the cognitive interviewing study; and preparations for the survey.

Formative Study

For the formative study, the following milestones were achieved:

- All data from the formative study were submitted, including verbatim transcriptions and translations of all recordings, as well as other structured data and notes collected during the formative phase.
- All transcripts from the formative study were coded.
- Preliminary analysis was conducted to inform the upcoming cognitive pre-test of the survey. This included constructing a draft animal dictionary and developing a draft key words dictionary

Survey

Staff highlighted key findings from the formative study that would be relevant for the standard survey instrument. This included findings related to animals never considered edible except by “others” (e.g., bats, dogs, primates), crops grown in these localities, seasonality of crops and animals, sensitivities about use of protected areas and bans on hunting, sensitivities related to talking about sacrifice due to Christianity, times when people were most likely to consume animals, and use of certain animals for medicinal reasons (e.g., rats reared to treat kwashiorkor in children).

Based on this local knowledge, the survey sampling strategy was modified and as a result, the protocol was amended. This amendment was submitted to both FHI 360's Protection of Human Subjects Committee (PHSC) and Makerere University's School Of Health Sciences Research And Ethics Committee. Approval of this amendment is still pending from both these institutions.

A request for proposals to implement the survey in 936 households (1,576 men, women and children) was issued. Nana Development Company was contracted after winning the competitive bid. Preparations are under way to implement the survey by early June.

Cognitive Study

During the quarter, preparations for the cognitive pretest were completed, including hiring research assistants and supervisors, selecting pre-test sites, and obtaining local permissions. PREVENT staff also trained 10 research assistants and two supervisors in cognitive interviewing techniques.

The cognitive pre-test was started in Kisoro district in both the semi-disturbed and disturbed locations, with both Bafumbira and Bakiga respondents (men and women). Care was taken to seek representation from both genders in both respondents and researchers. The study is expected to be completed by April 8.



Training for cognitive interviewing¹

¹ PREVENT obtained consent from individuals shown in all photographs included in this report.



Practicing cognitive interviewing



Research team in the field



After conducting an interview



Village in the disturbed area



Village in the semi-disturbed site

b. Malaysia Human-Animal Exposure Study

The Malaysia human-animal exposure was discontinued during this quarter due to overlap between the PREVENT-led study (a qualitative and quantitative assessment exploring people's relationship to animals in the context of social and environmental factors) and a study led by EPT partner PREDICT (a household survey on how emerging disease risk is linked to landscape type in areas close to where PREDICT is conducting a separate animal surveillance activity). Because these two studies would be conducted relatively close to each other in time and because there would be a significant overlap in the focus study populations, there was concern that the overlap would cause confusion as well as be an unnecessary burden on the local communities. After discussion with PREDICT and USAID, it was determined that the technical priority should be the study that is more tightly linked to animal surveillance.

PREVENT staff coordinated closely with PREDICT to ensure a smooth transition in terms of preparing communities in the area where the study will be conducted.

c. Laos Human-Animal Exposure Study

In March 2013, staff completed the first report for the human-animal exposure survey in Laos. Within each ethnic group (Hmong and Lao-Tai), household interviews were conducted among of the following subgroups: adult women (age 18 - 50); adult men (age 18 - 50); boys (age 10 – 14); and girls (age 10-14). The table below details the survey sample size by category and ethnic group.

Category	Ethnic group		Total
	Lao-Tai	Hmong	
Male	146	146	292
Female	146	146	292
Boy	92	99	191
Girl	94	94	188
Total	495	478	973

This report, which was disseminated to funders and Laos government stakeholders, highlighted key findings that illustrate the importance of social factors - such as ethnicity, gender and age - on exposure. Specifically, the survey showed that exposure varied substantially by societal roles (gender and age group).

Survey findings included the following:

- Of the three animal types of most interest to this study – bats, rodents and nonhuman primates - respondents were most exposed to rodents and least exposed to non-human primates.
- Nearly 100 percent of all age-gender-ethnicity subgroups were exposed to rats or mice at some point in the last year either through consumption in the home environment.
- Boys in both ethnic groups (Lao-Tai and Hmong) reported consuming (>80 percent) and hunting (75-95 percent) these rodents more than other groups.
- While the Lao-Tai and the Hmong were exposed to bats in equal proportions, the Lao-Tai tended to consume them while the Hmong used their feces as fertilizer. Both Lao-Tai and Hmong boys were the largest groups in this study to report hunting and eating bats in the last year (10-20 percent).
- While all subgroups reported using animal waste as fertilizer, more women, girls, and boys tended to use it for this purpose compared to men.
- The Hmong were exposed to non-human primates through consumption and hunting. One-third of Hmong males and one-fifth of Hmong females ate primates in the last year. The Lao-Tai had very limited contact with non-human primates.

Roughly 15 percent of Lao-Tai men, women, and children saw primates in the market; many fewer saw them in the environment or ate them.

- In terms of knowledge, attitudes and beliefs towards topics that may have relevance for risk of zoonotic disease transmission (e.g. knowledge that wild animal meat could increase risk of disease, belief that wild animal meat tastes better than domestic animal meat), there was not much variation between genders within ethnic/age group.
- Hunting and slaughtering of animals was primarily the domain of men and boys; the exceptions were rodents (slaughtered by a few women and girls) and poultry (slaughtered primarily by women). On the other hand, women and children were more involved in the butchering and cutting-up of different animals.

The last point above does not suggest that women and girls were not at risk of transmission from hunting and slaughtering; both Lao-Tai and Hmong females hunted and slaughtered rodents, and a very high proportion of women (higher than other subgroups) handled poultry. Therefore, the risk of transmission from hunting and slaughtering to women and girls is important, especially if these practices involve rodents and poultry.

The report highlighted the importance of these findings as a foundation to explore strategies and interventions – targeted to specific genders, ethnicities, and communities – to prevent or mitigate zoonotic disease transmission risk in the study area and its communities.

Status/Progress Towards Meeting Objectives: Currently, PREVENT is undertaking a more in-depth analysis of the Laos human-animal exposure data, focusing primarily on the frequency and intensity of exposure, as well as factors correlating with exposure to different animal groups. This will help to refine conclusions and potential interventions that can be made for various subpopulations (e.g., males vs. females).

d. Thailand Participatory Rapid Appraisal on Peridomestic Rodents

The first in a series of Participatory Rapid Appraisals in Southeast Asia has been conducted in Thailand. The series is eliciting community knowledge to identify feasible, acceptable strategies to mitigate the risk of exposure in each particular country. The relevance, acceptability, and feasibility of risk mitigation strategies identified through the studies will then be tested in behavioral trials.

The Thailand Participatory Rapid Appraisal was conducted with men, women, and children in the Muang and Mancha Khiri Districts of Khon Kaen Province from June through August 2013. Transcription and translation of data into English was completed in September 2013. Coding of the data was completed in March 2014. Data analysis is ongoing, and study findings will be written up by September 2014.

e. Lao PDR Rapid Appraisal on Human Interactions with Rodents and Bats

In 2013, PREVENT conducted a quantitative study about human exposure to animals in two ethnic groups (Lao-Tai and Hmong) in Laos. This study, noted in section c. above, found high levels of contact between humans and wildlife, and revealed that both the Lao-Tai and the Hmong were exposed to bats.

Based on these results, PREVENT is developing a Rapid Appraisal of Human Interactions with Bats and Rodents, due to begin in the second quarter of 2014, to determine and characterize interactions between humans and bats and to confirm that exposure to rodents in Laos is similar to that observed elsewhere.

During this quarter, the study protocol and instruments were finalized, FHI 360 IRB approval was obtained, and the protocol was submitted for approval to the Lao PDR National Ethics Committee of Public Health. Local research consultants were hired, and other logistical preparations for fieldwork were made.

Status/Progress Towards Meeting Objectives: This study is expected to planned to take place with men, women, and children in the Vang Vieng district of Vientiane province and the Khamkeut district of Bolikhamxay from April through June of 2014 to: describe human exposure to bats and rodents; understand how people perceive bats and how these perceptions might affect the risk of disease transmission; and identify strategies people use (or might be able to use) to mitigate the risk of bat and rodent exposure in these communities. The protocol estimates that the appraisal will take approximately six months from IRB approval to final report.

Additional Notes on Gender: The protocol stipulates that equal numbers of males and females will be sought out. It is expected that bat and rodent exposure will differ between men, women, boys and girls, thus all of these groups will be evaluated and analyzed separately as part of the final report.

f. Cambodia Avian Influenza Research

During this quarter, PREVENT developed a protocol for a study on “Exposure to poultry in Cambodia.” Original plans for this study included three sub-studies: a household qualitative study, a case-control study, and behavior trials. Details on these sub-studies are provided below.

A household qualitative study to obtain detailed information about activities involving potentially risky exposure to poultry that may not have been identified previously, either because they are new, because they are rare or so commonplace that they are not reported, or because they involve children, who have not been the focus of earlier studies. Four methods will be applied in each village:

1. *Mapping* of locations where four households interact with poultry.
2. *Observation* of interactions with poultry in those households and in selected locations in the village identified in the mapping as areas where villagers frequently interact with poultry.
3. *Participatory photography* whereby two adult male and two adult female photographers will be selected from the village and asked to take photographs of: a) their family and poultry; and b) their daily routines with children. Researchers will select photographs that show interesting interactions with poultry, and ask the photographers to talk about what is transpiring in the photo.
4. *Focus group discussions* (FGD) with adult males, adult females, and girls and boys 10-14. One FGD will be held with each group; if >30% of children are out of school, additional, separate focus groups will be convened for out-of-school children.

The case control study compares behaviors of sero-positives and -negatives in two villages.

Behavior trials to determine if possible alternatives to risky behaviors are feasible and acceptable, and to learn about circumstances and factors that affect performance of the behavior, including perceived benefits and detriments. Researchers will visit a small number of households and negotiate with relevant members of the household to agree on one or more alternative practices that the household will try during a set period. (These practices may be initially suggested by the researcher or by someone from the household.) At the end of the period, the researcher returns to the household and discusses their success in practicing the alternative behavior or a modification of it, the things that made the alternative easy or difficult, perceived benefits or negative consequences, and whether they think they might persist in doing it and why/why not. PREVENT plans to test alternatives to four behaviors in 20 households each, five in each of four villages.

During March 2014, Dr. Susan Zimicki traveled to Cambodia to discuss plans for the study with stakeholders (Ministry of Health, Ministry of Animal Welfare, WHO, FAO, Institut Pasteur du Cambodge) and to pretest some of the instruments. While there, she presented the study plan at a meeting of the Zoonosis Technical Working Group. The group suggested considering dropping the survey since there the World Bank recently carried out an eight-province survey. Participants in the meeting also mentioned that Institut Pasteur, working as part of the government outbreak response team, had completed serosurveys of all the inhabitants of two villages, one in Kampong Cham and the other in Kratie, where multiple cases of human H5N1 had occurred. Dr. Zimicki proposed to the ZTWG and to Institut Pasteur that PREVENT collaborate with Institut Pasteur to carry out a case-control study instead of the survey. There was early approval from both ZTWG and Institut Pasteur.

This is an exciting possibility. One of the mysteries of H5N1 is how an exposure that is so widespread – with high rates of poultry ownership in rural areas and possibly endemic H5N1 in poultry – affects so few people. Most of those who become sick have been exposed to sick and dead poultry, but so have large numbers of those who do not get sick. The explanation may be a poorly adapted virus, or rare human susceptibility, but an unexamined contributing factor may be variation in how people do things – for example, plucking birds messily or neatly, either because of level of experience, how they learned to do it, or personal style. We know little about this variation. Comparing the exposures of people who have evidence of transmission (seropositives) with those who do not may help us figure out what exposures are most risky.

Status/Progress Towards Meeting Objectives: A full protocol was submitted to the FHI 360 IRB in early March; a revised version (without the survey) has been resubmitted. This protocol has also been submitted to the Cambodia National Ethics Committee and will be reviewed at their April meeting. The case-control amendment will be submitted to both groups by the end of April, with implementation of the study expected to begin soon after approval is received. The study is expected to last approximately seven months from the time IRB approval is received, and by that time attempt to identify and provide better documentation of the specifics of activities associated with high exposure to poultry, particularly among children; and assess the limits of selected potential interventions to reduce exposure.

Additional Notes on Gender: The protocol calls for specifically recruiting, examining and analyzing women's activities and behaviors as part of the household survey component of the study. For the behavior trials, if a gender-neutral activity is being examined, both female and male primes will be enrolled. If it is not a gender-neutral activity (e.g., if only boys poach chickens), only the gender-appropriate participants will be enrolled. Participants in the case-control study will depend on the cases.

g. Thailand Rapid Ethnography of Bat Guano Mining

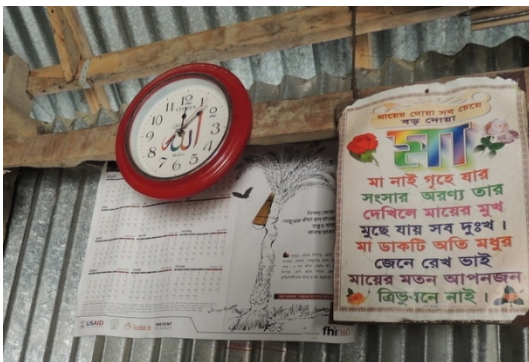
Mining of bat guano for fertilizer is arguably one of the most intensive ways that people can expose themselves to bats and bat-borne viruses. Guano mining in Thailand typically takes place in caves, where as many as several million bats may roost. Such caves have also become destinations for foreign tourists. A Rapid Ethnography of Bat Guano Mining was designed to: 1) describe bat and bat guano exposure and perceived health risks among people associated with guano mining; and 2) identify strategies people use (or might be able to use) to mitigate the risk of infection from exposure to bats and bat excreta. During this quarter PREVENT staff developed a research protocol and data collection instruments for the study, selected sites, obtained IRB approval from FHI 360's Protection of Human Subjects Committee (PHSC), submitted the protocol to a Thai IRB (at Khon Kaen University), and recruited Thai field researchers, transcribers and translators. Dr. Sidney Ruth Schuler, an anthropologist, will travel to Thailand in April-May to collaborate with FHI 360 local investigator Kanokwan Suwannarong in researcher training and data collection in the first site: Tham Khao Chong Pran in Ratchaburi. This cave is associated with a Buddhist temple and the mining is regulated by monks. The second site, run by a commercial company, is in Sakaeo. We expect to complete data collection by late June.

2. Interventions

a. Bangladesh Nipah Intervention

The BCC interventions to prevent Nipah virus in Bangladesh ended as the Nipah season came to a close. Over the past quarter, project staff conducted 381 meetings with opinion leaders, as well as meetings with communities and gachhis (sap collectors) to inform them of the benefit of using banas (skirts) to prevent the spread of Nipah virus through raw date palm sap consumption.

Although there was political unrest in Bangladesh at the time. AKK, the local NGO in charge of the intervention in Faridpur district, was able to conduct 381 meetings with opinion leaders in the intervention area. During those gatherings, opinion leaders were asked to support the upcoming community meetings and to inform the community and gachhis (sap collectors) about the benefit of using banas (coverings) to prevent the contamination of raw sap by bats and thus the spread of Nipah virus through raw date palm sap consumption.



To serve as a reminder of the campaign's key messages, 4,942 calendars were distributed among community leaders.

AKK also conducted 220 community meetings in rural villages to generate awareness of Nipah virus and the potential benefits of drinking only bana-protected sap.

During the intervention, 5,987 posters were placed in the intervention area villages and the TV PSA ran an average of 32 times per village in those villages with TV coverage.

The AKK team also conducted three rounds of visits to gachhis and tree owners in the intervention area for a total of 3,019 visits. During those visits, 1,160 gachhis were trained on the making of banas and 2,320 banas were provided to them. As part of an incentive program, 851 gachhis were awarded a sweatshirt in recognition for using banas to protect the raw date palm sap used for consumption.



(left) Bana used to protect the raw date palm sap collection pot from being accessed by bats.



(right) "My sap is bana-protected sap" reads the sweatshirt awarded to gachhis in the Faridpur intervention villages.

A TV campaign asking community residents to stop drinking raw date palm sap was run in Rajbari district, in those villages with TV coverage in Pangsha and Kalukhali, The campaign ended in January as well.



As part of the ongoing NiV research study, the icddr,b research team conducted the third wave of their quantitative study during the months of February and March. They conducted in-depth interviews with 31 gachhis, 40 community residents and 30 bat hunters to measure the effectiveness of the intervention in terms of awareness and knowledge of NiV. The interviews were conducted in Faridpur and Rajbari districts.

A member of the icddr,b research team interviews a rural village resident.

Mr. Garcia traveled to Bangladesh from February 17 to March 14, 2013. During his visit, he traveled to Faridpur to attend AKK's end-of-intervention meeting along with icddr,b's research team. The purpose of the meeting was to share experiences and lessons learned during the intervention. A final intervention report will be generated by AKK during the month of March.

While in the area, Mr. Garcia also met with icddr,b's field research team to get an update on the quantitative research study and discuss potential delays in the future. Mr. Garcia also met with icddr,b's management and financial team to discuss timely completion of all deliverables under the current contract by July 2014. All the activities will be completed on time as per the agreed upon plan.



AKK's field team directors with members of the icddr,b research team

b. Burma/Myanmar Avian Influenza Interventions

PREVENT activities are funded by USAID and the Australian Department of Foreign Affairs and Trade (DFAT). Activities supported by the Australian aid focus on community-based activities in the Upper Mekong countries region (i.e., Burma/Myanmar, Cambodia, Lao PDR, and Vietnam). All of the activities in Burma/Myanmar are funded by DFAT, particularly a special program focusing on highly pathogenic avian influenza and the response to H7N9 avian influenza across the Upper Mekong countries bordering China.

During the quarter, PREVENT staff worked under a GOM cabinet-approved Plan of Action (POA) to strengthen capacity related to highly pathogenic avian influenza, H7N9 avian influenza, and risk communication principles of five stakeholder groups: local officials, public and private veterinarians, community animal health workers (CAHWs), media, and small- and medium-scale poultry farmers. In cooperation with the Livestock Breeding and Veterinary Department (LBVD), PREVENT began developing and implementing training activities. Because the POA provides technical support to FAO, activities are targeting five townships in the 2012-2013 FAO focus areas for HPAI surveillance in the Mandalay Region: Madaya, Pyin Oo Lwin, Amarapura, Sintkaing and Pyawbwe. In these townships, PREVENT is building on the gains achieved by FAO.

Training Modules for Veterinarians, CAHWs and Poultry Farmers

PREVENT developed a four-day training-of-trainers module that was based on modules previously used by FHI 360 in Asia and Africa. This module is for training staff from MLF,

MVA and LBVD who will conduct a three-day training of veterinarians, CAHWs, and poultry farmers in the five townships. The module emphasizes the use of participatory adult learning methodologies and joyful learning techniques.

The first three days of the TOT module replicates the three-day training that the trainers will give, and addresses Newcastle Disease and Fowl Cholera, H5N1, H7N9, biosecurity, and other disease-prevention measures like hand washing and personal hygiene, as well as interpersonal communication (IPC) techniques including risk communication. This three-day module has been packaged as a Training Kit that contains 22 participatory learning sessions. All of the sessions use a combination of the following training methodologies: group discussion in plenary or small groups, small group work, dyads, games, demonstrations, role plays, and mini-lectures to synthesize learning points. A Knowledge Check is included after each group of similar sessions. The Kit has been translated into Myanmar language.

The fourth day of the TOT module focuses on strengthening the training skills of the trainees. It begins with a session on preparing an action plan for the cascade trainings they are responsible for conducting. Other sessions address use of the Training Kit, various training methodologies, issues that can crop up during cascade trainings, and how to plan and evaluate training. Several additional evaluation tools are included in the module, including a pre- and post-assessment form, daily feedback form, and a post-evaluation form.



TOT workshop participants

PREVENT organized the first TOT workshop from February 10-11 and February 13-14 (February 12 was a national holiday) in Yangon. A total of 21 participants – 13 male and eight female – attended the workshop. Ten were from MVA, seven from MLF, two from LBVD and two from FAO. Facilitators were Ms. Joy Pritchett from FHI 360, Dr. Wah Wah Han, PREVENT Myanmar Country Coordinator, and Ms. Eleanora De Guzman, PREVENT Consultant. Dr. Tony Williams, FAO/Myanmar Country Team Leader, gave the opening

remarks and welcomed participants. The full report on this TOT was submitted to USAID, Australia DFAT, and FAO Myanmar on March 10, 2014.

On the last day of the TOT, participants from MLF and MVA prepared action plans for conducting cascade trainings from May to August 2014 in the five townships. These plans contained schedules, training teams that would travel to each township, and the type of support needed from LBVD and PREVENT. The LBVD participants did not prepare action plans because most were from Yangon; they will develop action plans at the TOT for LBVD trainers from the five townships planned for April 28-29, 2014 (see section on TOT Module for Trainers of Local Officials below for additional details).

In consideration of the field reality that poultry farmers may not be available for three full days of training, the MLF and LBVD participants drafted an agenda for a shortened poultry farmer training that only requires three half-day sessions.

Evaluation of Activities

Post-evaluation questionnaires completed by 20 participants indicated that the TOT achieved its learning objectives, and that participants most liked sessions that were experiential and participatory. Based on pre- and post-assessment questionnaires, there was an increase of 51% in knowledge levels among the participants, and an increase of 41% in self-confidence levels.

Based on feedback obtained during the TOT, the module and Training Kit were further revised, particularly in refining the translation into Myanmar language. The revised Training Kit will be used during the second four-day TOT, which is planned from April 23-26 in Mandalay.

Media Orientation

PREVENT also developed a module for training senior MLF officials who will then hold half-day media orientation sessions for government officials and certain members of the media. This half-day TOT module consists of group work sessions that allow participants to review key information on H5N1 and H7N9, and help them identify the target audiences that media can best influence. The module also provides specific messages on avian and pandemic influenzas that are targeted to different stakeholder groups.

This module was used during a TOT with MLF officials in Yangon on February 15. Ten participants (eight male, two female) attended, including six senior officials from MLF, one editor of the MLF weekly newspaper for poultry farmers, and three LBVD officials, two from Yangon and one from NPT. The gender ratio of the participants (eight male and two female trainees) possibly reflects the actual gender ratio among senior officials in MLF and LBVD. The facilitators were Dr. Wah Wah Han, Ms. Eleanora De Guzman, and Ms. Joy Pritchett. The full report on this TOT workshop was submitted to donors on March 23, 2014.

The MLF participants determined that media should target a variety of audiences with accurate, timely information on avian and pandemic influenza. These audiences included:

- Consumers of poultry and relevant food products
- Farmers
- Local authorities
- Dealers from live bird markets and retailers from small markets
- All actors along the supply chain (“from farm to fork”)

- Government Ministries (especially MLFRD and MOH) and local officials
- Breeders of fighting cocks

During the course of discussions and group work, the participants disclosed several issues they face when they deal with the media, especially the private media:

- Sometimes the media's understanding of a topic (and what is published) is completely different from what LBVD or MLF has actually conveyed. Sometimes a reporter will write an article with correct information but the editor ends up making changes in an attempt to make the story more interesting or attractive, but that distort the information.
- There is a growing need to manage what the media communicates to the public. With the increasingly stronger presence of privately owned media in Myanmar, the new competition results in some media channels communicating news that is sensational and sometimes irresponsible.
- There is a need to train LBVD to become more effective spokespersons when they face the media.
- The training of local authorities planned under the PREVENT POA needs to include strengthening their knowledge and skills in coordinating with the media.

As a result, the participants agreed on the importance of launching media orientation sessions as soon as possible. PREVENT then developed a media orientation module for approximately 70 media practitioners in Yangon, NPT and Mandalay. The sessions are designed to utilize learning methodologies that will help members of the media understand and appreciate their significant and unique role in shaping and influencing attitudes, beliefs and practices of key stakeholder groups related to avian and pandemic influenza. In addition, the media need to be convinced to check with LBVD to ensure that the information they will publish on avian and pandemic influenza is correct and not misleading.

TOT Module for Trainers of Local Officials

PREVENT also drafted a module for two-day TOT for LBVD trainers, who will then conduct a one-day training of local officials on avian and pandemic influenza prevention and control.

As with the training of vets, CAHWs and poultry farmers, Day 1 of this TOT Module replicates the one-day local officials training. Sessions are aimed at developing participants' knowledge and understanding of H5N1 and H7N9, clarifying the roles of local officials on avian and pandemic influenza prevention and control, strengthening IPC skills, and preparing local officials' action plans. Learning methodologies include group discussion, small group work, games, and role plays. Day 2 focuses on strengthening participants' skills in facilitating training sessions. This last day agenda and evaluation tools are similar to the last day of the vet/CAHW/farmer training

Materials Development

In addition to the modules and accompanying training materials developed during the quarter, PREVENT created an Avian Influenza Flipchart that was adapted from flipcharts developed in FHI 360's previous avian and pandemic influenza projects. The illustrations were revised to make them relevant to the Myanmar rural context. The illustrations were printed in color and distributed to the four-day TOT participants in February. PREVENT

will add messages and finalize the flip charts so that they can be distributed to the vets, CAHWs, and poultry farmers during the cascade trainings in the five townships.

Status/Progress Towards Meeting Objectives: This TOT module will be pretested during a two-day TOT planned in Mandalay from April 28-29 with LBVD trainers. LBVD participants from the February training will also develop action plans for LBVD trainers from the five townships. This will move this target population forward in strengthening the capacity of key stakeholder groups (local officials, public/private veterinarians, community animal health workers, and small- and medium-scale poultry farmers) related to understanding and communicating the risks of highly pathogenic avian influenza, H7N9 avian influenza, and other poultry diseases that may affect national and local well-being and livelihoods.

Meetings

During this quarter, PREVENT participated in several coordination meetings related to Burma/Myanmar activities.

The Myanmar Country Coordinator, Dr. Wah Wah Han, participated in the National Multi-Sectoral Strategic Planning Workshop on Influenza A (H7N9), which was organized by FAO and the World Health Organization in NPT on January 16. The objectives of this meeting were to:

- discuss potential scenarios for H7N9 emergence in Myanmar, preparedness plans and activities to be taken, and information that could be updated with input from the public and animal health sectors
- facilitate discussion on technical and policy issues
- enable H7N9 preparedness and contingency planning recommendations to be developed

The meeting reviewed the progress of activities in the following areas:

- Cross-sectoral coordination at the regional and country levels
- Improvement of laboratory quality and biosafety for H7N9
- Preparedness and understanding of the poultry value chain and the related risks of H7N9 incursion in Myanmar

Participants agreed on the following:

- In collaboration with the relevant government authorities in Myanmar, to conduct national consultative meetings with relevant stakeholders to support the coordinated surveillance of H7N9 at the human-animal interface
- To update the poultry value chain analysis and carry out targeted risk-based surveillance in selected live bird markets or poultry aggregation points using a “longitudinal risk-based approach”
- To update emergency preparedness and contingency plans
- To consider risk and crisis communication activities in the case of H7N9 incursion
- To define culling strategies and compensation mechanisms
- To provide technical input and support for emergency response as needed

Dr. Wah Wah Han also met with Mr. Gopinath Chitoor of FAO at the ECTAD FAO office in Yangon on March 13. Dr. Han updated Mr. Chitoor on the progress of PREVENT Myanmar

and discussed areas to strengthen FAO-PREVENT collaboration related to risk communication for H5N1 and H7N9.

A meeting with Mr. Royce Escolar, Australian DFAT Senior Regional Program Manager, was held on February 17 in the DFAT Bangkok office and attended by Ms. De Guzman and Ms. Pritchett. They briefed Mr. Escolar on the results of the two TOTs that were recently completed in Yangon.

B. Market Systems and Trade (“Commerce”)

Commerce includes both local and international market systems for key priority wildlife species—bats, rodents, and non-human primates—and domestic animals—including poultry, pigs, and other livestock. Work by PREVENT during the past quarter to identify and distinguish risky contact, such as in markets and supply chains where large numbers of people and domestic animals come in contact with potentially infectious wild animals, includes the following:

1. Research

a. Republic of Congo and Democratic Republic of Congo Market Studies

From January to March 2014, PREVENT collaborated with University of Marien Ngouabi in ROC and with FHI 360 in DRC to implement key informant research and market observations in Brazzaville and Dolisie (ROC) and in Kinshasa (DRC). Dr. Zo Rambeloson, senior research advisor and principal investigator of the study, in collaboration with Mr. Euloge Ndossa, PREVENT research consultant, organized a seven-day in-room training and a three-day field practice training. The training sessions took place in Brazzaville on January 15-26, in Dolisie on February 6-16, and in Kinshasa on February 19 to March 1, 2014. The classroom training conveyed basic technical information and necessary skills for the research team, and was organized so the team members could reach a common understanding on the methodology and organization of the market research components. The market study objectives were explained, discussed, and reviewed throughout the training.

At the end of the training, PREVENT selected the supervisors and interviewers/observers using a rigorous evaluation and recruitment process. In Brazzaville, 15 candidates (three supervisors and 12 interviewers/observers) out of 103 original applicants were selected. In Dolisie six candidates (one supervisor, and five interviewers/observers) candidates out of 22 were selected, and in Kinshasa 20 candidates (four supervisors and 16 interviewers/observers) out of 67 were selected.

The research team worked in the eight markets in Brazzaville, two markets in Dolisie, and eight markets in Kinshasa that had been selected for observation. About 322 key informant interviews were conducted (127 in Brazzaville, 47 in Dolisie, and 148 in Kinshasa). Key informants included vendors of bush meats, vendors of live chickens, market managers, representatives of vendor associations, and cleaners. The main objective of the key informant interviews was to obtain a better understanding of the bush meat/live domestic animal trade and biosecurity practices at the markets.

At each selected market, the team also conducted a one-week vendor stall observation (using smartphones as data entry devices) of all bush meat vendors that sold any live, freshly dead (whole or in pieces), or smoked non-human primates, rodents, and bats. They also observed five live-chicken vendors located in the bush meat or chicken sections of the market. Each vendor was observed at least three times during each day of observation in the market.

In early March, USAID headquarters requested that observation of domestic animals that are sold live in markets where bush meat is sold be added to the study. PREVENT adjusted its observation method and began conduct a head count of all live cows, pigs, ducks, goats, sheep, and guinea fowl, carried out once during each day of observation at the market place.

The data collected during each observation included the type/animal species and quantity of all live animals; animal meats (wildlife and domestic) sold dead and fresh, either whole or in pieces or smoked (during the scoping we determined that the interior portion of smoked meat may still be raw); and the duration each product stays in the market. In Brazzaville, two rounds of observations were conducted on February 10–22, 2014 and March 17–30, 2014 (the second round included the domestic animals head count). In Dolisie the first series of observations took place on March 3–15, 2014, and in Kinshasa the first series of observations (that included the domestic animals head count) took place on March 17–30, 2014. A total of 169 vendors of bush meat (about 55 in Brazzaville, 38 in Dolisie, and 76 in Kinshasa) were observed, and a total of 80 live chicken vendors were observed (40 each in Brazzaville and in Kinshasa). In Dolisie, no live domestic animal vendors were found.

PREVENT also conducted a three-day “mini exit interview” of adults (between 18-50 years old) leaving the bush meat sections of each selected market during the week of observation. A total of 2,080 “mini exit interviews” were conducted (1,280 in Brazzaville, 160 in Dolisie, and 640 in Kinshasa). Information collected included: their place of residence (quartier), their frequency of shopping at each market, their purchase of bush meat, and their average time spent in the part(s) of the market selling bush meat. The purpose of this survey was to help identify the areas where a probabilistic household survey will be carried out. A main consideration in designing the survey sample is to capture the variation in the types of people who buy bush meat in the market.

Dr. Rambeloson will analyze key informant, observation, and mini exit interview data during the next quarter.

b. Vietnam Wildlife Farms Research

National Wildlife Farm Registration Pilot Census

A working agreement to implement the Pilot Census was signed by PREVENT and FAO and finalized on January 2014. According to the working agreement, PREVENT is charged with planning and facilitation of the training, while FAO is tasked with implementation of data collection and supervision. Both parties will conduct data analysis.

This quarter, PREVENT, in collaboration with CITES Management Authority (CITES MA) obtained an official approval from the Vietnam Administration of Forestry (Forest) under the Ministry of Agriculture and Rural Development (MARD) for the implementation of a study on wildlife farms, including the pilot census, in 11 Southern provinces and Ho Chi

Minh City. This approval authorizes FHI 360 and CITES MA to directly work with the selected provinces and city to plan and implement pilot census activities.

Following this approval, PREVENT, in collaboration with FAO, Forest, and CITES MA under MARD, planned and facilitated three training courses. The training sessions were completed by the end of February 2014, as outlined in a timeline proposed by FAO. Each training session was two days long; they were held to prepare provincial and district representatives of Forest Protection from 11 Southern provinces and Ho Chi Minh City to conduct the *National Wildlife Farm Registration Pilot Census*. Eighty-seven participants, including the heads of the Technical Division of the Provincial Forest Protection Department and technical staff at district Forest Protection Stations, were thoroughly trained on the data collection instruments, supervision and verification of data, and the use of GPS devices.² (*A full agenda can be provided upon request.*) After individual exercises and field practice, all of the participants felt confident and committed to participate in the Pilot Census in their respective provinces.

Status/Progress Towards Meeting Objectives: As of the end of the quarter, FAO was awaiting final government approval to begin the census. As a result, a refresher training has tentatively been scheduled for April 24 – May 2. This activity has been transferred to FAO for completion, per USAID direction.

Description of Wildlife Farm Practices Research

This quarter, PREVENT received official approval from the FHI 360 IRB and the Hanoi School of Public Health for the Description of Wildlife Farm Practices study. IRB approval by HSPH serves as a legal framework for implementation of the research in the 11 Southern provinces and Ho Chi Minh City.

The goal of describing wildlife farm practices is to elucidate activities and behaviors related to wildlife farming that may increase the risk of zoonotic diseases. Particular attention will be paid to biosecurity practices, and will hopefully provide ideas for improving them to prevent emerging infectious diseases.

Status/Progress Towards Meeting Objectives: The original pretest that was planned for December 2013 was delayed due to the IRB's requirement to have full IRB approval before pretesting. Now that full approval has been secured, PREVENT expects to pretest the study tools in An Giang in April 2014. Field data collection will follow. However, due to the delay in implementing the Pilot Census, PREVENT will use the provincial-level registration data as the sampling frame to select wildlife farms. This will result in a longer period of study implementation (not all registration data is up-to-date, so some farms that are initially selected may no longer be raising key animals; PREVENT will select replacement farms during a second round of sampling). PREVENT is employing an additional analyst so that analysis and reporting can be finished by September 2014. Because of overlap with the cross-border rat trade, PI Kathleen O'Rourke will be aided by co-investigators Hibist Astatke and Emily Evens.

² Because of late arrive of GPS devices, participants in the first training did not have the opportunity for hands-on experience during the training session.

c. Vietnam Cross-Border Rat Trade Research

During this quarter, PREVENT completed the recruitment of a Regional Principal Investigator, Dr. Tran Minh Hai, and two Team Leaders: Hoang Thu Huong for Vietnam and San Thy for Cambodia. These consultants, together with PREVENT's Program Coordinator in Vietnam, the two Co-Principal Investigators from FHI 360 (Kathleen O'Rourke and Betsy Costenbader), and an interpreter from the FHI/Cambodia office, Oum Sokkeum, pretested the study tools in An Giang, Vietnam and Kandal, Cambodia from March 21–27. A two-day training was facilitated by Ms. O'Rourke and Dr. Costenbader. Following the training, the team practiced with the data collection instruments in the field for three days, dedicating one day to each of the following: the questionnaire, the mapping exercise, and the observation guide. The remaining day and a half was spent debriefing and finalizing the study tools, as well as planning for the full team training and study launch during next quarter. The research team in Cambodia is currently comprised of six males and two females. The Vietnam team is comprised of two males and five females.



Rat Trade – Pretest of the questionnaire



Rat Trade – Classroom Practice with the Mapping Exercise



Field practice on how to take GPS coordinates

Status/Progress Towards Meeting Objectives: Currently, PREVENT has obtained IRB approval for the Market Chain Analysis of the Cross-Border Rat Trade in Vietnam. The team has responded to comments from the FHI 360 IRB and is waiting for the full board IRB meeting in Cambodia, scheduled for late April 2014. Once approval is obtained, the cross-border evaluation can begin examining the rat trade and the practices and situations that appear to put individuals and communities at risk of zoonoses from rats. The study is expected to last approximately 8 months from IRB approval to final report.

Additional Notes on Gender: The study protocol calls for interviewing key informants including community leaders (e.g., business owners, village chiefs, or leaders of local groups such as a women's group). The goal is to select key informants of different genders, ages, and ethnicities. In recruiting individuals producing, processing, selling, collecting, or transporting rats and rat products, both males and females will be sought. At the end of the third wave of enrollment, we will pool the list of referrals (from others involved in the rat trade) who have not yet been contacted, and purposively select women and children to participate in the final and fourth wave of data collection.

The protocol also calls for enrolling some participants from the survey and market mapping exercise in the observation component (60 observations across the 4 provinces: 15 observations per province, with 12 observations per market trader type). Because we suspect that factors such as education, livelihoods, and access to assets affect the way and men and women participate in the rat trade, it will be important emphasize the inclusion of women in the observation to gain insight into some of the differences these factors may pose.

d. Indonesia Market Scoping/Market Characterization

Last quarter, Ms. Kathleen O'Rourke and Field Coordinator Mr. Jusuf D. Kalengkongan visited potential market study sites in North Sulawesi to plan for and select 10 markets for the Longitudinal Market Monitoring Study in North Sulawesi, Indonesia.

This quarter, the concept note for research was finalized and received a waiver from the FHI 360 IRB. Due to the remote nature of data collection (each market is spread across North Sulawesi) and the need to collect data on a daily basis, electronic data collection was selected for this activity. After a thorough review of remote data-collection possibilities, Open Data Kit was selected as the software of choice, with data submitted through a mobile network. Once the study is under way, the team will have near-real-time data on the type and number of wildlife available in the markets each day, the type and form of domestic

animals, and reports (including photographs) on selected aspects of the market environment. The North Sulawesi market monitoring training and launch is planned for early in the next quarter.

The Office of Forestry has approved the Technical Agreement between PREVENT and their office. An official signing ceremony is planned before the launch of data collection early in the next quarter.

2. Interventions

a. Lao PDR Market Monitoring for Improvement Pilot

To reduce the risk of infectious diseases that could arise from interactions of humans with animals traded in markets in Laos, a market biosecurity improvement activity was undertaken. During the last quarter, representatives from Vientiane Capital and Provincial Trade and Industry Staff (market monitors) and market administrators from five markets were introduced to and practiced a problem-identification (monitoring) and problem-solving (negotiation) approach. This approach, guided by a series of tools, allows market monitors and market administrators to discuss and agree together which standards the market will focus on, as well as to determine specific market improvements to implement and monitor over the following three months.

Of the five market administrators trained, there were four men and one woman. The same gender breakdown was found among the five district market monitors: four men and one woman. It is difficult to definitively state why there were more men than women among the market administrator and market monitor populations in the pilot area. We observed, though, that in all of the targeted markets, there were more female vendors than male vendors.

A review meeting of these district market monitors and market administrators was held on March 4, 2014 and attended by representatives from the Department of Communicable Diseases and Control, the Provincial/District Department of Industry and Commerce, five district markets, and PREVENT staff. The meeting served as a forum for market monitors, administrators, and owners to share their experiences on the market monitoring activity and how the monitoring/market improvement tools were used. Many of the monitors reported that they observed improvements at each market, including better garbage collection, improved cleaning and hygiene practices, and separating the market toilet areas for men and women.

At the meeting, Mr. On Sy, the head of the Vang Vieng Department of Industry and Commerce in Vang Vieng district, Vientiane province, noted that, *"There are eight markets in Vang Vieng, but our office offered the "biggest" market to be included as a pilot in this project because we want to learn from the pilot implementation. We acknowledge the benefit from the training and engaging the market administrator. We found the tools very useful. Their use made our work better and more efficient."*

Mr. On Sy also reported that use of the tool by the district monitor revealed many issues that needed to be resolved, not only by the provincial and/or district office of Industry and Commerce, but through collaboration with other related agencies. As a result, they are

starting to coordinate with the provincial health office on health-related issues, with the environment office for issues such as garbage collection, and with other partners.



In less than three months of close monitoring and negotiation between the district monitor and the market owner, these fish vendors replaced their old wooden old tables with stainless steel materials using their own resources.

Vang Vieng district market is one of the five market biosecurity pilots being supported by PREVENT. The other markets are That Luang, Nong Niew, Huay Hong, and Souanmone. In the That Luang market, significant improvements also were noted: toilets were clean, a sink and water for hand washing was provided; and toilets for men and women were separated.

In one of the markets in Vang Vieng, the market employed four people to clean the market. After the monitoring exercise, the owner added three people to the market cleaning crew, and an additional three workers to improve and clean the market drainage system. In addition, announcements were made via market loudspeaker that vendors should cooperate in maintaining the cleanliness of the market.



Water is provided in the hand washing station.

In the Souanmone market, the market monitor and administrator decided to first address the issue of garbage collection. Mr. Sombath Silamath, from the Industry and Commerce Department in Sisattanak district (where Souanmone market is located), shared that after discussion with the market administrator and market owner there, the owner prioritized

three issues: 1) improving the roof of the market; 2) providing more rubbish bins to avoid overflowing bins and litter by the end of the day; and 3) collection of garbage every day.



The market floor in the meat section of That Luang market, Dec. 2013.



The market floor in the meat section of That Luang market, March 2014.



Toilets for men and women are labelled appropriately.



Before and after the improvements at the garbage depot in Souanmone market.



New garbage bins bought by the market owner to encourage vendors to throw dispose of trash in designated areas.

Mr. Souly Milamay, the market owner of Huay Hong market, assigned an additional staff person in the market to collect the garbage from every vendor's stall. He began playing a CD on good hygiene practices and hand washing over the loud speaker at the market. He is presently constructing an extension of the market building to improve the zoning for meat and fish, and will build a hand-washing station there.

In the Nong Niew and That Luang markets, the tables used by meat vendors are usually made of concrete. Recently, the idea of having the tabletops be made of ceramic or covered with plastic or tarpaulin materials has been introduced so that surfaces can be cleaned more easily. In the end, rather than buying tarpaulins, the vendors improvised and used banana leaves, which are abundant in the community, to cover their tables.



Meat vendors in That Luang market use banana leaves to cover the concrete tops of tables. Banana leaves were discarded after use.

In March 2014, PREVENT conducted a technical update for market monitors. This technical update focused on strengthening negotiation and problem-solving skills for market monitors to apply during their monthly market monitoring visits. Participants concentrated on understanding barriers and motivators to behavior change (why people change or do not change) and its effects on markets. The technical update built upon the problem-solving

approach used in this activity, including identifying the problem, finding root causes, proposing possible solutions, and implementing them. All of the PREVENT trainers/facilitators were female.

During their next scheduled monitoring visit, market monitors were tasked with applying some of these skills during their meetings with market administrators so they could better assess and troubleshoot the specific market improvements that were agreed upon in the December 2013 meeting.



Ms. Thuy Hoang, PREVENT Regional Technical Advisor on Behavior Change Interventions, facilitates the Technical Update Workshop on March 7, 2014 for district monitors.



Status/Progress Towards Meeting Objectives: Cycle 2 of the pilot is planned for May 2014, when an assessment will be conducted to determine if there are additional changes in the markets. After the assessment is complete, market monitors and market administrators will convene to negotiate new improvements and/or troubleshoot improvements that were not achieved. Following this meeting, monthly monitoring visits will be conducted. The ultimate goal for this activity is to make incremental improvements in biosecurity/hygiene in the markets; to develop a system/process for determining improvements that the market will undertake; and to finalize tools and a process for trade and industry to use.

Laos Cross-border Collaboration on Food Safety

During the quarter, PREVENT staff in Laos provided technical assistance to 10 government staff from the Provincial Health Department of Vientiane Capital to participate in the Thai-

Lao Collaboration on Food Safety. The collaboration has been a long-standing informal agreement among three border provinces in Thailand and Laos; it was an offshoot of USAID technical assistance to cross-border areas on reducing the risk of avian influenza. The meeting was coordinated and hosted by the Provincial Health Department of Khon Kaen province, Thailand. At the invitation of the Vientiane Capital Provincial Health Department, PREVENT staff, Dr. Cecile Lantican and Khounkham Xaymounvong, attended the meeting. (The Vientiane Capital Health Department collaborates with PREVENT on a market monitoring pilot activity to improve market biosecurity, as detailed in the section above.) At the meeting, the three provinces discussed strategies and criteria to identify and reach out to possible partner markets, restaurants, and hotels operating in these provinces – especially those in cross-border areas – that would qualify and meet food safety standards. The meeting ended with the signing of a letter of agreement (LOA) among the three provinces to kick off activities in the next few months.

Together with government representatives, PREVENT staff had the opportunity to visit the Banglampoo market in the city of Khon Kaen, and observed food safety practices which are maintained by the market administrator and personnel. The market is privately owned and managed. The interaction with the market owner provided staff with insights on how the government can mobilize private-sector partnerships; how the government can assist the private sector in building capacity to detect foods that are unfit for human consumption; and how the private sector can invest in maintaining the market environment clean and safe.

Among other meetings in Laos, the FHI 360 office in Vientiane hosted the regular EPT Technical Working Group meeting on March 14, which included representatives from USAID, PREVENT, PREDICT, IDENTIFY/FAO and IDENTIFY/WHO. The partners tackled issues from the last EPT quarterly meeting with the government and discussed ways to address these concerns before the next quarterly meeting (and probably the last meeting to be initiated by the government before the USAID EPT program ends in September 2014).

b. Bangladesh Live Bird Markets Intervention

During this quarter, Mr. Fernando Garcia met with the FAO team in charge of the Live Bird Market intervention to discuss the re-design of their LBM training manual. This manual will be re-designed and printed by PREVENT. FHI 360's local office will be in charge of working with local vendors to get the training manual ready before June 2014.

C. Land-Use Change

Land-use change, especially as caused by extractive industry activities in previously pristine areas, is the third key driver of conditions that favor emergence of infectious disease. Work by PREVENT during the past quarter in such settings include the following:

Extractive Industry Working Group (EIWG) and Tool Development Testing

Extractive industry activities picked up this quarter. FHI 360 negotiated and finalized contracts with both Chatham House and iSOS to revive the IDRAM (Extractive Industry Risk Assessment and Management) initiative with the express goal of testing the tools with four mining companies in the Democratic Republic of Congo. The full team held a conference call to discuss activities and to plan for the meeting in London at the end of March. Renuka Bery and Dr. Owen Wrigley attended the meeting at Chatham House on March 31, 2014 to restart

efforts on the IDRAM initiative, along with USAID and Ms. Louise Flynn of RESPOND. Ms. Bery and Ms. Flynn presented on extractive industry activities to date and gave a brief introduction to the tools and the simulation efforts that took place in Uganda and DRC last year under the RESPOND project. The team will meet with Public Health England on April 1, 2014 to further discuss the simulation activities. In addition, Ms. Bery and Ms. Flynn have organized meetings with International Council on Mining and Metals (ICMM) and IPIECA while in London to update them on progress and to discuss opportunities to involve them in EI efforts over the coming year.

Ms. Flynn posted the EI tools on the International Association for Impact Assessment (IAIA) web site for feedback at the recommendation of Canadian impact assessment professionals. In addition, despite an aborted attempt to visit Kilo Gold Mine in DRC because of the continued unrest and insecurity, the head of the mine reviewed the tools and prepared extensive comments that the team is considering. Responses from industry professionals at corporate headquarters of companies such as Shell indicate that emerging pandemic threats are not high on companies' list of risks to address. Professionals in the field seem to show more interest than headquarters officials. Further, these companies believe that they are already engaged in good practices that will mitigate risks posed by emerging infectious diseases. All of the feedback will be considered and the team will prepare a briefing note during the next quarter.

An RFP for assistance on extractive-industry-related activities through September 2015 was posted. Responses are due in the coming quarter.

Finally, continued efforts to engage the International Finance Corporation have not yielded any response to date.

IV. Knowledge Generation and Information Sharing

A. Knowledge Products

1. Traditional Communication

Early in the quarter, PREVENT responded to a request from USAID to compile a comprehensive list of publications, tools, manuals, and guidelines that were developed under the AI.COMM and PREVENT projects, as well as documents that are planned or being reviewed under PREVENT. Staff provided USAID with a 20-page list of products. (A copy of this document can be provided upon request.)

a. H7N9 Communication/Materials

Throughout February and March 2014 PREVENT staff collaborated with FAO on the development of messages and materials on the emerging H7N9 situation in China and Southeast Asia. Initially, USAID requested that emergency communications materials should be developed for Laos, Myanmar, and Vietnam to help them prepare for the possible introduction of H7N9, with FAO providing draft technical content, and PREVENT developing written communication materials tailored to various target audiences. The content was to primarily be targeted to individuals who are associated with markets (e.g., market managers, vendors, and consumers) to educate them on H7N9 and how to address it. As part of the original USAID request, PREVENT was also tasked with translating the materials

into Burmese, Lao, Vietnamese, and possibly Chinese. Finally, FAO would be responsible for printing and delivering the materials to the individual countries.

FAO and PREVENT staff worked collaboratively on the development and revision of several products on responding to H7N9 in markets, including a brochure, posters, and a frequently asked questions document. PREVENT staff also created matrices of suggested messages and activities for various target groups, and a print materials summary document. (Copies of the various draft products and communications between PREVENT and FAO can be provided upon request.)

Status/Progress Towards Meeting Objectives: As of the end of the quarter, FAO proposed that PREVENT staff would support FAO in producing pre-emergency “stage setting” communications in markets in Vietnam that might be replicated elsewhere. Discussions are continuing, but it has been clarified that PREVENT will not disseminate materials. Tasks that will be allocated include editing, translation, and layout and design (with graphic elements such as illustrations and photographs). As of the last iteration of the communication plan, specific considerations with regard to gender were not included.

b. Conference Outreach/Presentations

Prince Mahidol Award Conference

Early in the quarter, PREVENT was asked to provide support to the annual Prince Mahidol Award Conference, January 29-31, 2014, in Bangkok. PREVENT provided materials and posters for the USAID booth at the conference, as well as staff time to help set up and man the USAID booth during the three-day event.

American Public Health Association

PREVENT submitted three abstracts for presentation at the American Public Health Association Annual meeting in November 2014. These were:

- Factors contributing to emerging infectious diseases: findings from a qualitative study in Uganda
- Characterizing Human Interactions with Bats in Lao PDR: A Participatory Rapid Appraisal
- Market as location at high risk of emerging pandemic threats: Example of markets in Brazzaville in Republic of Congo (ROC)

American Society for Tropical Medicine and Hygiene

PREVENT submitted a proposal to hold a symposium at the ASTMH annual meeting in November 2014. The symposium, entitled “How the social dimensions of the human-animal interface affect the risk of emerging infectious disease transmission,” is intended to showcase PREVENT’s series of qualitative and quantitative studies that illustrate how social factors affect the human-animal interface and thus the risk of disease transmission. The presentations that comprise the symposium will position the research under a “One Health” framework that accounts for social as well as epidemiologic and ecologic factors; summarize the findings of three comprehensive studies of human exposure to animals that demonstrate how potential risk is related to social factors such as ethnicity, age, and gender; describe “microbehaviors” associated with variations in human exposure to bats

and rodents that were revealed by rapid ethnographic assessments in Thailand and Laos; and present results of a behavior-based intervention in Bangladesh – informed by a study addressing social context - to reduce the transmission of Nipah virus.

An additional three abstracts, separate from the symposium proposal, are being prepared for submission to ASTMH early in the next quarter.

Presentations

While in Cambodia, Dr. Zimicki participated in the Cambodia-Vietnam Bilateral Meeting on H5N1 on March 24-25. She gave a presentation on “Reducing exposure to poultry in Cambodia (BCC, risk mitigation & intervention).”

c. Journal Articles

Two manuscripts were prepared and submitted during the quarter: one to the American Journal of Tropical Medicine and Hygiene on rodent contact in Khon Kaen province in Thailand; and the other to the Plos Neglected Tropical Diseases journal on rodent consumption in Khon Kaen.

V. Administrative and Financial Update

The following provides an overview of the administrative processing of contracts, purchase orders, and payments made during this reporting period.

Burma/Myanmar

Consultant Agreements = 1
Purchase orders = 2
Payments to vendors & consultants = 1

Indonesia

Purchase orders = 2
Payments to vendors = 1

Thailand

Consultant Agreements = 9
Purchase orders = 3
Payments to vendors and consultants = 13

Laos

Consultants agreements = 22
Purchase orders = 3
Payments to vendors and consultants = 2

Vietnam

Consultants agreements = 3
Payments to vendors = 1

Cambodia

Consultants agreements = 8
Purchase orders = 3
Payments to vendors and consultants = 1

Uganda

Consultants agreements = 12
Consultant modifications = 4
Purchase orders = 4
Payments to vendors and consultants = 8

Democratic Republic of Congo

Consultants agreements = 40
Consultant modification = 40
Purchase orders = 2
Purchase order modifications = 1
Payments to vendors and consultants = 48

Republic of Congo

Consultants agreements = 21
Purchase orders = 2
Consultant modifications = 0
Payments to vendors and consultants = 42

Malaysia

Consultants Modification = 1
Payments to vendors and consultants = 2

