LMI: Combatting Emerging Pandemic Threats in Southeast Asia

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BACKGROUND
Nearly 75 percent of all new, emerging or re-emerging diseases affecting humans at the beginning of the 21st century have originated in animals. These include HIV/AIDS, severe acute respiratory syndrome (SARS), the H5N1 strain of avian influenza and the 2009 pandemic H1N1 influenza virus. The speed with which these diseases can emerge and spread presents serious public health, economic and development concerns. It also underscores the need to develop comprehensive disease detection and response capacities, particularly in “hot spot” areas such as the Mekong basin, where factors are favorable to disease emergence. Recognizing this need, in 2009 USAID launched the five-year Emerging Pandemic Threats (EPT) program which seeks to aggressively pre-empt or combat diseases that could spark future pandemics.

APPROACH
Target Countries: Cambodia, Laos, Thailand and Vietnam

The program draws on expertise from across the animal and human health sectors to build regional, national and local capacities for early disease detection, laboratory-based disease diagnosis, rapid disease response and containment, and risk reduction. It is composed of four complementary projects—PREDICT, PREVENT, IDENTIFY and RESPOND—with technical assistance from the Centers for Disease Control and Prevention (CDC).

In the lower Mekong Basin, the EPT program is enhancing our understanding of the spread of viruses and key drivers of disease emergence—from deforestation and land use change to wildlife trade and livestock product demands. By identifying and addressing these high risk entry points, and collaborating with government partners to bolster routine disease detection and response capabilities, the EPT program is developing a suite of evidence-based solutions to public health challenges, while working to safeguard human and animal health and livelihoods in Southeast Asia and beyond.

The Emerging Pandemic Threats (EPT) program emphasizes early identification of and response to dangerous pathogens in animals before they can become significant threats to human health.
**IMPACTS**

**Pathogen detection:** A critical step to preventing a future spillover event, where viruses jump species, is to target surveillance to identify virulent germs circulating silently in high risk wildlife carriers. By utilizing modern molecular diagnostics to screen samples from high risk sources of disease such as bats, rodents and non-human primates, the EPT program is building surveillance capacity and generating data that will inform risk mapping and disease detection.

Academic and national veterinary diagnostic laboratories in member countries of the Lower Mekong Initiative (LMI) – Cambodia, Laos, Thailand and Vietnam – are increasing the ability to screen against viral families. To date, over 3000 animals have been sampled and novel viruses have been identified. Improved understanding of how these viruses circulate, and their potential for human exposure, will help refine ongoing surveillance and response strategies leading to targeted prevention efforts.

**Defining and assessing risk:** In close partnership with host governments, the EPT program documents human-animal contact rates throughout the Mekong region. Characterizing high risk conditions that promote the spread of disease provides insight on how viruses cross species barriers and pose a pandemic threat. Studies in each LMI country are currently underway to capture fluctuations in wildlife trade contributing to pandemic risk in order to tailor interventions.

**Strengthening outbreak response capacity:** Enhanced laboratory diagnostic support and applied field epidemiology trainings are strengthening routine disease detection and response capacity. This helps LMI countries meet reporting obligations under the International Health Regulations adopted by state members of the World Health Organization (WHO) and the World Organization for Animal Health (OIE) standards. The new Southeast Asia One Health University Network (SEAOHUN), comprised of 10 universities in the region, provides a platform for competency-based curriculum development, thus improving student learning experiences and applied research. SEAOHUN strengthens the future workforce in disease prevention, detection and response, and has inspired Thailand and Vietnam to launch satellite One Health university networks.

**Mitigating risk:** Research is ongoing to develop interventions to alter highest risk practices of handling, consumption and preparation of wildlife. Toolkits designed to teach workers in the extractive industry best practices in clothing, food consumption and sanitation while in high-risk rural areas are under development.

**PARTNERS**

**Implementing Partners:** Centers for Disease Control and Prevention.  
**PREDICT:** University of California, Davis, Wildlife Conservation Society; EcoHealth Alliance, Global Viral Forecasting Initiative, Smithsonian Institution  
**PREVENT:** FHI 360, Global Viral Forecasting Initiative  
**IDENTIFY:** Food and Agriculture Organization, World Health Organization, World Organization for Animal Health  
**RESPOND:** Development Alternatives, Inc., Tufts University, University of Minnesota, Training Resources Group, Ecology & Environment, Inc.