

# CAMBODIA



Meeting with Cambodian colleagues.

## OVERVIEW

Cambodia is currently beginning their tenth year of support through a U.S. Centers for Disease Control and Prevention (CDC) cooperative agreement. This support has enabled Cambodia to build human capacity and infrastructure for influenza surveillance, response, laboratory diagnosis, and pandemic preparedness resulting in the establishment of a molecular laboratory capable of detecting influenza viruses, seasonal and avian, and other respiratory viruses at Cambodia's National Institute of Public Health Laboratory (NIPHL). Currently, sentinel sites in six provinces are being supported for influenza-like illness (ILI) surveillance. NIPHL, Cambodia Centers for Communicable Diseases (CCDC) and CDC are planning a sustainability workshop in late 2015 to establish a plan for continuing the surveillance capacity.

## SURVEILLANCE

Influenza surveillance did not exist in Cambodia prior to CDC support. Since the implementation of the cooperative agreement, laboratory-based ILI and SARI surveillance systems have been established under the Ministry of Health (MOH) with technical guidance from CDC and WHO. Currently, influenza-like illness (ILI) surveillance involves seven sites (health centers and hospital outpatient departments) located in seven provinces and Phnom Penh. SARI surveillance consists of eight hospitals from Phnom Penh, Siem Reap,

## HIGHLIGHTS

- Established influenza virus isolation and characterization at NIPH's virology laboratory in early 2015.
- Enhanced influenza laboratory infrastructure to meet National Influenza Center (NIC) criteria and sustain the current activities of laboratory testing.
- Strengthened and expanded the national influenza surveillance system.

Kandal, Takeo, Kampot, Kampong Cham, and Svay Rieng. Influenza surveillance has clearly demonstrated the existence of annual influenza seasonality in Cambodia.

## SURVEILLANCE ACTIVITIES

- Utilized and upgraded the mobile phone short message service (SMS) reporting system for ILI surveillance.
- Performed testing for influenza A and B viruses and subtyping for H1N1pdm09, H3N2, H5N1, H7N9 and H9N2 viruses as part of ILI and SARI surveillance, as well as MERS-CoV.
- Conducted site visits at all ILI and SARI sentinel sites.
- Produced a monthly Respiratory Disease and Influenza Bulletin through the MOH/CCDC.
- Implemented testing for human metapneumovirus, RSV, and parainfluenza viruses as part of SARI surveillance.

## LABORATORY

Support from the cooperative agreement has resulted in substantial strengthening of laboratory capacity, including technician skills, at the MOH's National Institute of Public Health (NIPH). NIPH is able to perform real-time RT-PCR testing for all major influenza virus types and subtypes, including influenza A (H1N1) pdm09, H3N2, H5N1, H7N9, H9N2 and influenza B/Victoria and B/Yamagata, and also for MERS-CoV, in addition to multiplex PCR testing for other selected respiratory viruses. In early 2015, cell culture and virus isolation including virus characterization were introduced to the NIPH laboratory. NIPH can also perform gram stain, culture and identification

for various clinical specimens and supports the development of microbiology laboratories at national and provincial hospitals.

### LABORATORY ACTIVITIES

- Tested 3,011 influenza specimens (979 from ILI sentinel sites; 2,032 from SARI sentinel sites).
- Submitted a total of 60 influenza-positive samples to the WHO CC's in Atlanta and Melbourne.
- Performed internal quality control for media preparation, antimicrobial susceptibility testing, and gram stain.
- Participated in WHO's External Quality Assessment Project (EQAP) and CDC's performance panel.
- Completed development of the BSL-2, BSL-2+, and cell culture rooms and put essential equipment in place.
- Strengthened SARI surveillance by incorporating microbiologic testing of sputum and blood culture samples, resulting in significantly greater laboratory activity.

### PREPAREDNESS

CDC support through WHO has considerably advanced pandemic influenza preparedness and planning in Cambodia. The National Committee for Disaster Management, together with partnering ministries, have continued to work on a national pandemic plan while the MOH and WHO have led the development of a health sector response plan. NIPH laboratory staff have performed real-time RT-PCR to detect influenza A and B viruses including influenza A subtypes H3N2, H1N1pdm09, H5N1, H7N9, H9N2, and novel MERS-CoV.

Virus isolation and characterization has been performed in the BSL-2/2+ laboratories. Bacteria cultures have been performed for respiratory pathogens identification and drug sensitivity testing. The CCDC team, together with partners, is well prepared to conduct investigations and respond to any unknown or unusual outbreak. They have conducted field investigations and responses, including clinical case management on a cluster of fever death of unknown etiology and three foodborne outbreaks, and presented findings to the technical working group (TWG).

### PREPAREDNESS ACTIVITIES

- Provided recommendations on infection control measures and case management.
- Conducted emergency outbreak investigations and response.
- Developed reports to disseminate findings to stakeholders through press releases.
- Worked through the existing RRT/AET system from community to central level to investigate and respond to emerging and re-emerging diseases following event-based surveillance.
- Supported outbreak investigations and response for human cases of avian influenza A (H5N1) virus in 2013 and early 2014.

### TRAINING

- Identified two NIPH technicians to attend the Strengthening of GISRS-International Air Transport Association (IATA) Licensing for NICs workshop.
- Trained five NIPH technicians on influenza virus isolation and characterization (January 2015).
- Trained five NIPH technicians on infection control prevention in a BSL-2/2+ facility (February 2015).
- Identified one staff member to attend the Next Generation Sequencing and Bio-information Data Analysis course in Thailand (March 2015).
- Identified one staff member to attend the Advanced Influenza rRT-PCR Workshop in Atlanta, GA—USA (March 2015).

### INFLUENZA VACCINE ACTIVITIES

We do not perform influenza vaccine activities at this time. Our goal is to introduce a seasonal influenza vaccination program in the near future, in particular after conducting an analysis for disease burden from the surveillance data.