

# VIETNAM



A sample taken from a pig in Nam Dinh Province as a part of the cross-sectional study of influenza at slaughterhouses.

## OVERVIEW

The Vietnam Ministry of Health (MOH) has been conducting influenza-like illness (ILI) surveillance since 2006, through the National Influenza Surveillance System (NISS). It originally was conducted at 15 sentinel hospitals distributed across Vietnam but has been reduced down to four sites for sustainability purposes. The grantee is currently completing the last year of their sustainability cooperative agreement and will be graduating to the maintenance phase of the program. The National Influenza Surveillance System Project had two regional Hygiene and Epidemiology/Pasteur Institutes and two sentinel sites (enrolling cases of both ILI and severe acute respiratory infection [SARI]), located in Hanoi (the National Pediatric Hospital) and HCMC (the Hospital of Tropical Diseases). The principal objective of the project is to sustain the nationwide influenza surveillance network in Vietnam that provides epidemiologic and virologic information to guide influenza prevention and control policies and activities.

## SURVEILLANCE

In 2005, the U.S. Centers for Disease Control and Prevention (CDC) entered into a five-year cooperative agreement with the Vietnam MOH National Institute of Hygiene and Epidemiology (NIHE) to establish a National Influenza Surveillance System (NISS).

## HIGHLIGHTS

- Submitted and presented six abstracts at international conferences.
- Provided assistance to the Global Health Security (GHS) Program in Vietnam, including MOH/EOC enhancements and proposed national multi-pathogen SARI surveillance.
- Completed the Animal-Human Interface (AHI) Longitudinal study in people, pigs, and poultry; second Burden of Disease study.
- Provided teaching and mentoring assistance to FETP in Vietnam.

Developed primarily as an outpatient surveillance system for ILI, the system supported up to 15 sites that were strategically located throughout the country's four geographic regions. The system also includes nationwide passive surveillance that detected cases of severe viral pneumonia (SVP) in hospitals, including the majority of Vietnam's confirmed human cases of avian influenza A (H5N1) virus infection.

A second five-year cooperative agreement, in 2010, expanded surveillance to include hospitalized cases of severe acute respiratory infection (SARI), and to provide sustainability by MOH in supporting the surveillance system. Currently, and with some variability in surveillance sustainability over the last two years, the cooperative agreement supports four ILI and eight SARI surveillance sites in fiscal year 2014, and two ILI and five SARI surveillance sites in fiscal year 2015. The MOH administratively supports seasonal influenza surveillance sustainability, yet only provided limited financial support for four ILI sites in 2014.

## SURVEILLANCE ACTIVITIES

- Continued to monitor and identify the primary influenza season in Vietnam, including optimal time for vaccination.
- Identified year-round influenza virus activity in Vietnam, with on average one identifiable period of increased influenza activity over a five-month period from late-April to mid-September,

indicating an “influenza season” primarily during the late spring and summer months.

- Continued antigenic characterization and antiviral resistance surveillance from viral isolates collected from the NISS.
- Conducted SARI surveillance for cases of avian influenza A (H7N9) virus in up to four hospitals in three northern Vietnam provinces likely to receive referral cases. No samples were positive for avian influenza A (H7N9) virus.
- Worked with NIHE epidemiology and laboratory staff to provide the “Influenza Weekly Update Vietnam” report of influenza virus surveillance activity in Vietnam, including ILI, SARI, and SVP.
- Conducted surveillance for avian influenza A (H7N9) virus in poultry in traditional and non-traditional live bird markets in three Northern provinces likely to receive poultry from China.

## LABORATORY

Vietnam has two National Influenza Centers (NIC), at the National Institute of Hygiene and Epidemiology (NIHE) of Hanoi and the Pasteur Institute of Ho Chi Minh City (PI-HCMC). NIHE and PI-HCMC continue to send human seasonal influenza virus samples to the WHO Collaborating Centers (CC) at CDC Atlanta.

The AHI Program collaborates with the National Center for Veterinary Diagnostics (NCVD) of the Department of Animal Health/Ministry of Agriculture and Rural Development (DAH/MARD), which provides avian influenza poultry samples to CDC Atlanta for review and analysis. Human and animal samples provide information on the influenza virus types, characterization, and evolution in Vietnam, and also contribute to the knowledge of influenza viruses and anti-viral resistant patterns in Asia. With CDC Vietnam support and through the DAH cooperative agreement, CDC Poxvirus and Rabies Branch provided technical support and laboratory equipment for rabies diagnosis at NCVD.

### LABORATORY ACTIVITIES

- Tested 1,220 ILI samples from the outpatient sentinel sites from October 1, 2013–April 12, 2015, with an influenza positivity rate of 19%.
- Tested 729 SARI samples from inpatient sentinel sites from October 1, 2013–April 30, 2015, with an influenza positivity rate of 5%.

- Tested and identified no positive samples for avian influenza A (H7N9) virus through NISS or NCVD.
- Tested 26 samples from persons with severe viral pneumonia from October 1, 2013–April 30, 2015, detecting four (15%) cases caused by seasonal influenza viruses and no cases of avian influenza A (H5N1) virus.
- Conducted ten site visits to the influenza laboratory under the Regional Public Health Institutes participating in NISS.

## PREPAREDNESS

The Influenza and AHI Programs provided One Health support to MOH and MARD for preparedness and response activities related to avian influenza A (H7N9) virus, MERS-CoV, and Ebola virus.

This included a risk assessment on avian influenza A (H7N9) virus conducted with MOH, MARD, WHO and the Food and Agriculture Organization (FAO) and Influenza and AHI Program support during MOH/EOC activation for Ebola preparedness, Vietnam Ministerial National Steering Committee meetings and other preparedness activities.

In addition, the Influenza and AHI Programs at CDC Vietnam, through their support of the Global Health Security Agenda, provided leadership and technical expertise to the CDC Vietnam GHS Program. This included ensuring that the already established CDC Influenza platform in Vietnam was considered part of the enhancements to MOH’s public health preparedness, including for the International Health Regulations. Specifically, this allowed the national SARI surveillance system to be used as part of the GHS project and the Global Public Health cooperative agreement awarded to GDPM in 2014.

### PREPAREDNESS ACTIVITIES

- Supported both GHS Program Emergency Management Systems and Emergency Operations Center (EOC) Lanes, including completion of an EOC Operations Handbook, SOPs, and forms.

## TRAINING

- Supported Vietnam FETP, including assisting with the development of training modules, classroom training sessions and mentoring, and providing technical review of abstracts, presentations, and manuscripts.



A photo taken at Hai Boi Market in Vietnam.

## INFLUENZA VACCINE ACTIVITIES

The MOH General Department of Preventive Medicine (GDPM) was awarded a vaccine policy cooperative agreement. GDPM conducted the first meeting in Hanoi on 11 September 2014 with 50 attendees from various MOH departments, institutes, and hospitals. They also prepared the Terms of Reference for a Technical Advisory Group to assist in providing data and information generated by these activities to the MOH and the National Immunization Technical Advisory Group for influenza vaccine policy considerations.

The Influenza and AHI Programs assisted GDPM in the development, training, and pilot of a knowledge, attitude, and practice (KAP) survey regarding influenza vaccine knowledge and use for physicians and pregnant women. The Influenza and AHI Programs also assisted GDPM in the review and development of a vaccine use needs assessment, including identifying gaps in data for introducing a seasonal influenza vaccination program and estimation of current seasonal influenza vaccine use.

## RESEARCH

Currently, CDC's Influenza Division has four bilateral cooperative agreements with the Government of Vietnam, three with the Ministry of Health (MOH) and one with the Ministry of Agriculture and Rural Development (MARD). The agreements provide for support to build sustainable public health capacity through surveillance, research and policy development activities.

Two cooperative agreements, one with MOH and the other with MARD, focus on One Health research activities at the animal-human interface of influenza virus evolution and transmission among avian, swine, and humans. The MOH agreement also focuses on identifying the burden of influenza disease in Vietnam and the health care utilization practices of the population.

All research projects occur at the local, provincial and national levels, and obtain information and data to enhance both human and animal health policies for influenza prevention and control. The following are examples of completed research activities between Vietnam MOH and MARD and CDC's Influenza Division.

- Animal-human interface longitudinal study to identify influenza viruses infecting humans and animals.
- Serological survey to assess asymptomatic infection with avian influenza A (H5N1) virus in communities in northern and southern Vietnam in 2012.
- Cross-sectional study of influenza viruses in humans and swine at slaughterhouses, 2013–2014.
- Survey to assess healthcare seeking behavior for respiratory illness in a northern province of Vietnam.
- Analysis of influenza-related severe acute respiratory infection in the North of Vietnam to assess healthcare burden and economic impact.