

Thailand



Capital: *Bangkok*

Infant Mortality Rate: *15.41/1,000 live births*

Population: *67,448,120 (July 2013 est.)*



Overview

Knowledge of the epidemiology of influenza in the tropics has increased substantially because of CDC's collaborative work in Thailand. The work CDC and the Thai Ministry of Public Health (MOPH) collaborated on led to the introduction of a seasonal influenza vaccine into Thailand's National Vaccination Program. During the 2009 H1N1 influenza pandemic, collaborative projects provided real-time data to help track the epidemic and assess risks. Thailand's aggressive changes in biosafety, community education, and prompt detection have eliminated outbreaks of avian influenza in the last several years. CDC also worked with WHO to create a regional stockpile of personal protective equipment and medicines for emergency outbreak response.

Highlights

- Purchased about 3.5 million doses of influenza vaccine for use in the public sector in 2013.
- Recommended seven high-risk groups for annual vaccination: health care personnel, persons with chronic disease, persons 65 years and older, pregnant women, obese persons, persons who are mentally disabled, children aged 6 months to 2 years.
- Evaluated vaccine coverage and vaccine effectiveness in the high-risk groups.

Surveillance

Thailand has a long-standing sentinel surveillance system for influenza (it was established in 2004). The system collects clinical specimens from sentinel sites around the country and routinely performs influenza virus analysis and monitoring for drug resistance, and submits viral isolates and isolates that cannot be subtyped to WHO Collaborating Centers. There are currently 10 established sentinel surveillance hospitals throughout the five regions of Thailand and the Bangkok Metropolitan area. Data from the systems are shared weekly, with partners and sites via a report posted on a public website. These data are used to inform decisions by policy makers. Using the strength of the existing influenza surveillance system, the Thai National Influenza Center (NIC) and Thai Department of Disease Control (DDC) have collaborated closely with WHO and CDC to expand the system to detect two novel viruses in SARI specimens; Middle East Respiratory Syndrome coronavirus (MERS-CoV) and influenza A (H7N9) virus. In addition, educational messages/fact sheets were updated using data from unusual outbreaks in-country and globally and distributed to executives at the MOPH.

Surveillance Activities

- Used the influenza surveillance system as the model for the establishment of a national surveillance system for emerging infectious diseases.
- Distributed weekly surveillance data and interpretive summary in Thai language via the NIC website and the Weekly Epidemiological Surveillance Report. Materials were used widely by public and private health care facilities as well as executive levels of the MOPH.

Laboratory

With regard to the sentinel influenza surveillance system, in 2012, the Thai NIC tested 3,590 specimens from patients with ILI and 721 from patients with SARI. Among the specimens from ILI patients, 760 (21.2%) were positive for influenza viruses (242 were influenza A (H1N1)pdm09, 97 were H3N2, and 421 were influenza B). Among the specimens from SARI patients, 91 (12.6%) were positive for an influenza virus (25 were influenza A (H1N1)pdm09, 20 were H3N2, and 46 were influenza B).

Laboratory Activities

- Conducted the annual scientific meeting for the Virology Association of Thailand.
- Circulated a weekly situational report and posted publically available data at <http://www.thainihnic.org/>.
- Analyzed influenza strain data from 2005–2012 to assess annual vaccine match and presented a poster on the results at an international conference.

Preparedness

In 2012, Thailand conducted their third self-assessment of the National Inventory of Core Capabilities for Pandemic Influenza Preparedness and Response. The first two assessments were in 2008 and 2010. With multiple time points, Thailand is better able to assess areas of improvement and where more work is needed. As expected, they scored highest in the area of laboratory capability followed by outbreak response. In 2013, Thailand published the third version of their pandemic preparedness plan called "The National Strategic Plan for Emerging Infectious Diseases (EIDs) 2012–2016" which expands beyond influenza to encompass threats from all emerging infectious diseases.

Research Projects

- Randomized Controlled Trial of the Immunogenicity of Intramuscular versus Intradermal Trivalent Inactivated Split Virion Influenza Vaccine in HIV-infected Men who have Sex with Men in Bangkok, Thailand
- Pediatric Respiratory Infections Cohort Evaluation (PRICE)
- Influenza Vaccine Knowledge, Attitudes, and Practices in Pregnant Women and Their Providers in Thailand: A Vaccination Program Evaluation
- Influenza-Associated Mortality in Thailand, 2006–2011

**see Research Section for additional information*

Preparedness Activities

- Conducted the third assessment of the National Inventory of Core Capabilities for Pandemic Influenza Preparedness and Response in May 2012.
- Organized a national workshop to develop the operational plan on preparedness, prevention and resolution of problems from emerging infectious diseases (EIDs) in March 2013.
- Used Thailand's Rapid Response Teams to promptly investigate possible cases of influenza A (H7N9).

Training

This past year saw the emergence of two new viral respiratory diseases, influenza A (H7N9) and MERS-CoV. To address these new concerns and educate the medical workforce, Thailand's Influenza Foundation partnered with the Ministry of Public Health for several trainings. In addition, the Thai NIC trained laboratory scientists in diagnostics.

- Conducted a scientific writing course in conjunction with the Influenza Foundation of Thailand for health care personnel (January 2013).
- Conducted a course for health care personnel on influenza A (H7N9), MERS-CoV and dengue virus with the Influenza Foundation of Thailand (June 2013).
- Attended a meeting on influenza A (H7N9) in Beijing (August 2013).
- Trained staff in the 14 regional medical science centers on new PCR diagnostics for H7N9 and MERS-CoV.
- Conducted a two-day workshop to review the proficiency test program (February 2013).

Publications

Cowling BJ, Ip DKM, Fang VJ, Suntarattiwong P, Olsen SJ, Levy J, Uyeki TM, Leung GM, Peiris JSM, Chotpitayasunondh T, Nishiura H, Simmerman JM "Aerosol transmission is an important mode of influenza A virus spread in households in Hong Kong and Bangkok" *Nature Communications* 2013;DOI: 10.1038/ncomms2922.

Gupta V, Dawood FS, Muangchana C, Lan PT, Xeuatvongsa A, Sovann L, Olveda R, Cutter J, Oo KY, Rati TSD, Kheong CC, Kapella BK, Kitsutani P, Corwin A, Olsen SJ "Influenza Vaccination Guidelines and Vaccine Sales in Southeast Asia: 2008–2011" *PLoS One* 2012;7(12):e52842.

Levy J, Cowling BJ, Simmerman JM, Olsen SJ, Fang VJ, Suntarattiwong P, Jarman RG, Klick B, Chotpitayasunondh T "The serial intervals of seasonal and pandemic influenza viruses in households in Bangkok, Thailand" *American Journal of Epidemiology* 2013; doi: 10.1093/aje/kws402.