second trimester of pregnancy. The findings led to a revision of the treatment protocol and vaccination priority given to pregnant women in Thailand.

**Keywords:** Influenza A (H1N1), pregnancy, fatal, pandemic, Thailand

**Code 577 Speaker 64**

**Title:** Influenza-Like Illness Seasonality and its Association with Meteorological Variations in Dak Lak Province, Vietnam, 2004-2009

**Presenter:** Hau Pham

**Background:** Influenza is a global public health and economic burden. Its patterns of seasonality differ considerably between geographic regions, but the factors underlying these differences are not well understood. Clarifying the potential role of climate factors on incidence of influenza could provide an insight into the mechanisms of the seasonality of the disease. This study documents the activity of influenza-like illness (ILI) in Dak Lak province of Vietnam and examines its temporal association with climate factors.

**Methods:** From 2004 through 2009, monthly ILI episodes were reported from all commune health stations and hospitals in 13 districts of Dak Lak province (total population: ~1.7 million) by national communicable disease surveillance. Temperature, sunshine duration, rainfall and humidity were recorded as monthly averages by local meteorological stations across the province. The association between these climatic factors and ILI was assessed by using a Poisson regression model.

**Results:** During the study period, 260,556 episodes of ILI were reported. The mean monthly number of ILI cases recorded during the Dak Lak rainy season (July through December) was significantly higher (p<0.01) than that recorded in the dry season (Risk Ratio: 1.17; 95% confidence interval: 1.04-1.31). In a multivariable Poisson regression analysis, an increased risk of ILI was independently associated with higher temperature (Risk Ratio: 1.05; 95% confidence interval: 1.01-1.31) than that recorded in the dry season (Risk Ratio: 1.17; 95% confidence interval: 1.04-1.31). An increased risk of ILI was independently associated with higher temperature (Risk Ratio: 1.05; 95% confidence interval: 1.01-1.31) than that recorded in the dry season (Risk Ratio: 1.17; 95% confidence interval: 1.04-1.31). In a multivariable Poisson regression analysis, an increased risk of ILI was independently associated with higher temperature (Risk Ratio: 1.05; 95% confidence interval: 1.01-1.31) than that recorded in the dry season (Risk Ratio: 1.17; 95% confidence interval: 1.04-1.31). In a multivariable Poisson regression analysis, an increased risk of ILI was independently associated with higher temperature (Risk Ratio: 1.05; 95% confidence interval: 1.01-1.31) than that recorded in the dry season (Risk Ratio: 1.17; 95% confidence interval: 1.04-1.31). In a multivariable Poisson regression analysis, an increased risk of ILI was independently associated with higher temperature (Risk Ratio: 1.05; 95% confidence interval: 1.01-1.31) than that recorded in the dry season (Risk Ratio: 1.17; 95% confidence interval: 1.04-1.31).

**Conclusions:** These data suggest that monthly rainfall and temperature could be used as ecological indicators of ILI risk in the Vietnam’s Central Highlands region. Intensified surveillance and control of influenza during rainy season periods are recommended. The data also suggest that the occurrence of influenza in the region likely results from multiple causes which remain to be delineated.

**Keywords:** influenza, influenza-like illness, temperature, seasonality, regression analysis

**Code 469 Speaker 65**

**Title:** Evaluation of the National Virological Surveillance of Influenza in Taiwan, 2009

**Presenter:** Chia-ping Su

**Background:** Taiwan Centers for Disease Control began laboratory-based respiratory illnesses virologic surveillance in 1999, to monitor the causes of respiratory illnesses in the community and establish a domestic virus database. Nasopharyngeal swabs from patients with respiratory illnesses collected by sentinel physicians were tested for viruses using real-time polymerase chain reaction and virus culture in ten contract laboratories. During the 2009 H1N1 influenza pandemic, the virus diversity, consistency with other influenza surveillance systems, and timeliness were of particular interest.

**Methods:** All nasopharyngeal specimens collected in 2009 were included. We analyzed the weekly number of influenza-positive specimen, positive rate, and compared the trend with the Taiwan Real-time Outbreak and Disease Surveillance System (RODS), which used automatically extracted hospital emergency department ICD-9-coded diagnosis data. Specimen origin and timeliness of reporting were also analyzed.

**Results:** There were 17,909 specimens obtained; 514 (2.8%) yielded seasonal influenza A/H1N1, 405 (2.3%) seasonal A/H3N2, 3203 (17.9%) pandemic 2009 A/H1N1, 39 (0.2%) seasonal A/untyped, 56 (0.3%) influenza B, 431 (2.4%) parainfluenza, and 1,888 (10.5%) other respiratory viruses. The trend of weekly number of influenza-positive specimens was similar to that of influenza-like illness activity in RODS, showing a bimodal pattern. The trend of influenza-positive rate in submitted specimens, however, was unimodal. The laboratory results were reported 2 weeks after specimen submission for 50% of the specimens. The influenza-positive rate for specimens submitted by emergency rooms (29%) is higher than those by outpatient clinics (15%) (p<0.01).

**Conclusions:** A domestic virus database is established using this system, but timeliness could be improved. Number of influenza-positive specimens and positive rate are both important in estimating influenza activity. Standardizing sentinel site sampling criteria may improve the consistency between surveillance systems.