

Respiratory Disease Surveillance In 6 Royal Thai Army Hospitals Along Thai Borders

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The Royal Thai Army (RTA) has 34 hospitals that serve the military and surrounding civilian population with 10 located in areas with high border traffic near Myanmar, Malaysia, Laos, and Cambodia. In order to determine the seasonal and regional etiology of respiratory disease, enhance outbreak response capability and detection of avian influenza, and to enable the safe collection of clinical samples, the RTA established a network of respiratory disease surveillance sites at 6 border area hospitals. Adults who present with a history of fever and cough or sore throat or rhinorrhea are consented and enrolled. Respiratory samples are tested with a rapid test for influenza A and B on-site. Aliquots are sent to AFRIMS in Bangkok for influenza genotyping using realtime RT-PCR and to identify other respiratory pathogens by MassTag PCR. MassTag PCR amplifies genetic material utilizing domain-specific primers tagged with a unique mass to allow spectrometric analysis and detection of up to 30 respiratory pathogens. Our panel identifies influenza A viruses, influenza B, both genotypes of respiratory syncytial virus (RSV) and human metapneumovirus (hMPV), enterovirus, adenovirus, 2 human coronavirus, 3 human coronaviruses including the causative agent of SARS, 4 subtypes of human parainfluenza virus (PIV), *Chlamydia pneumoniae*, *Mycoplasma pneumoniae*, *Streptococcus pneumoniae*, *Legionella pneumophila*, *Haemophilus influenzae* and *Neisseria meningitidis*. We collected 630 samples from March 2007 to January 2008. Using rapid testing, 53 (8%) were positive for influenza A and 17 (3%) for influenza B. To date, 409 samples have been tested by realtime RT-PCR, 89 (21.8%) were positive for influenza A (54 H1 and 35 H3 subtypes) and 17 (4.2%) were influenza B. MassTag PCR revealed 143 of 409 samples were infected by virus (Influenza A, 20-B, RSV-A, -B, hMPV, enterovirus, adenovirus and PIV 4 subtypes) and bacteria (*M. pneumoniae*, *H. influenzae* and *S. pneumoniae*). In addition MassTag PCR identified co-infected of pathogens such as RSV-B with *S. pneumoniae*, adenovirus + coronavirus-OC43+ *H. influenzae*, *H. influenzae* with *S. pneumoniae*, influenza A, or PIV-1. 51% of samples remained unknown. Testing for many respiratory pathogens provides a comprehensive picture of disease burden in this population and greatly improves our ability to detect and respond to emerging diseases including avian influenza.

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