



Emergency and Re-emergence of H5N1 Influenza Viruses in Poultry in Southeastern Asia

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A highly pathogenic avian influenza (HPAI) H5N1 virus caused disease outbreaks in poultry in China, and seven other East Asian countries in late 2003/early 2004, resulting in fatal human disease in Thailand and Vietnam. Here we demonstrate a flow of genetic reassortment events traceable back to the precursor of H5N1 viruses that caused the initial outbreak in Hong Kong in 1997, and subsequent outbreaks in 2001 and 2002. These reassortment events gave rise to a dominant genotype in chicken and duck, designated "Z", that was responsible for this year's outbreak. This study was able to witness hitherto, unrecognizable evolution of a virus potentially positioning itself for human pandemicity and, as well, a global threat to poultry. These findings offer the first opportunity for baseline influenza pandemic preparedness at the avian level, an opportunity enhanced by the seasonal occurrence of H5N1 viruses in the winter months in ducks in southern China. This study suggests that H5N1 viruses with pandemic potential are endemic in the region and therefore not easily eradicable and long-term control measures are required.