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Shigui Ruan* (ruan@math.miami.edu), Department of Mathematics, University of Miami, Coral Gables, FL 33146. *Modeling the Transmission Dynamics of Avian Influenza H7N9 Virus in China.*

In March 2013, a novel avian-origin influenza A (H7N9) virus was identified among human patients in China and a total of 124 human cases with 24 related deaths were confirmed by May 2013. There were no reported cases in the summer and fall 2013. However, the virus has been coming back in November every year. In fact, the second outbreak from November 2013 to May 2014 caused 130 human cases with 35 deaths, the third outbreak from November 2014 to June 2015 caused 216 confirmed human cases with 99 deaths, the fourth outbreak from November 2015 to July 2016 caused 114 confirmed human cases and 45 deaths, respectively. The current outbreak starting from November 2016 has caused hundreds of cases and deaths. In this talk, I will introduce some recent studies on modeling the transmission dynamics of the avian influenza A (H7N9) virus from birds to humans and apply our models to simulate the open data for numbers of the infected human cases and related deaths reported by the Chinese Center for Disease Control and Prevention. The basic reproduction number R_0 is estimated and sensitivity analysis of R_0 in terms of model parameters is performed. Our studies demonstrate that H7N9 virus has been well established in birds and will cause regular outbreaks in humans again in the future. (Received August 01, 2017)