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358 Little Hall, Gainesville, FL 32611. *Seasonality in Avian Influenza H5N1.*

Avian influenza H5N1 has been infecting poultry and humans in many countries since 2003. The cases follow a seasonal pattern with peaks in the winter months. This pattern is puzzling as most of the human cases occur in equatorial countries where even the seasonal human influenza occurs with different pattern. We hypothesize three different mechanisms that may be responsible for the seasonality in H5N1 cases: (1) seasonality in direct transmission in domestic birds; (2) seasonality introduced by migratory patterns in wild birds; (3) seasonality introduced by environmental transmission of H5N1. We incorporate all these types of seasonality one by one or in combination in 7 different models. We fit each of the models to the cumulative number of human cases reported by the World Health Organization for the period January 2005-December 2009. We compare the models based on their Akaike Information Criterion (AIC) score. We find that model that incorporates seasonality in the direct transmission in domestic birds best explains the data. Furthermore, we use the best fitted model to project the cumulative number of human cases of H5N1 through 2011 and compare it with the incoming data. The best fitted model shows good agreement with future data. (Received August 15, 2011)