TEMPLE UNIVERSITY
Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Wednesday, 3 October 2018, 4:00 p.m.
Room 617 Wachman Hall
(refreshments and social at 3:45 p.m)

Mathematical Model of Zoonotic Influenza Subtype A (H7N9) Spread in Human Population

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Abstract. This paper deals with the dynamics of human infection by zoonotic influenza of type H7N9 both in birds and in humans. A mutation to the virus can increase the infectiousness of zoonotic influenza and its risk to become pandemic influenza. We have formulated a mathematical model of avian influenzas effect on the human and bird population. A basic reproduction number for both the human and bird population has been computed, and respectively, therefore we have proved that the model is locally and globally asymptotically stable for disease-free equilibrium points when basic reproduction number for both populations is < 1. Also proven is the endemic equilibrium point, which is globally asymptotically stable in the bird population when > 1. Extensive numerical simulations and sensitivity analysis are carried out for various parameters of the model. The effects of Vaccination, Sequestration and Recovery are critically analyzed and divide into their respective classes.