1073-92-65 **Folashade B Agusto*** (fbagusto@gmail.com), Department of Mathematics, Austin Peay State University, Clarksville, TN 37040, and **Abba B Gumel** (gumelab@cc.umanitoba.ca), Department of Mathematics, University of Manitoba, Winnipeg, Manitoba, R3T 2N2, Canada.
Quantitative Analysis for a Model for the Transmission Dynamics of Low and Highly Pathogenic Avian Influenza. Preliminary report.

A deterministic model for the transmission dynamics of two strains of avian influenza is designed and rigorously analyzed. The model has a globally asymptotically stable disease free equilibrium for a special case when the reproduction number is less than unity. And it exhibits the phenomenon of backward bifurcation, where the stable disease-free co-exists with a stable endemic equilibrium, when the associated reproduction number is less than unity. This phenomenon is caused by the re-infection of the exposed and infectious birds with low pathogenic avian influenza. The model in the absence of mutation, progression and re-infection with the highly pathogenic strain can have a continuum of co-existence equilibria when the associated reproduction number of the two strains are equal and exceed unity. On the other hand the model can exhibit co-existence or competitive exclusion between the two strains when the reproduction number of one strain exceed the other strain. (Received July 25, 2011)