1086-60-1821 **Divine Tito Wanduku*** (wandukudivine@yahoo.com), 3170 Grand pavilion dr. Unit 101, Tampa, FL 33613, and **Gangaram S Ladde** (gladde@usf.edu), 4202 East Fowler Avenue, PHY, Tampa, FL 33620. *GLOBAL ANALYSIS OF A STOCHASTIC TWO-SCALE NETWORK HUMAN EPIDEMIC DYNAMIC MODEL WITH VARYING IMMUNITY PERIOD.* Preliminary report.

The recent rapid spread of infectious diseases of humans is closely associated with the spatial complex human population structure and the underlying large-scale inter-patch connection human transportation. Furthermore, the fluctuations in disease endemicity within patch dwelling populations are closely related with the hereditary features of the disease. We present a stochastic SIR delayed dynamic epidemic model for a two-scale dynamic structured population. The disease confers varying time infection acquired immunity to recovered individuals. The varying time delay period accounts for the time-lag during which recovered individuals with conferred infection acquired immunity become susceptible. We investigate the stochastic asymptotic stability of the disease free equilibrium of the two-scale structured mobile dynamic population, and further examine the impacts on the eradication of the disease. (Received September 24, 2012)