1056-37-293 **Salisu Mohammed Garba*** (garba@cc.umanitoba.ca), Department of Mathematics, 342 Machray Hall, University of Manitoba, Winnipeg, Manitoba R3T 2N2, Canada. *Mathematical Analysis of Dengue Treatment Model with Variable Viral Load.*

A deterministic model for the transmission dynamics of dengue, which accounts for its viral load variability upon infection, is designed and rigorously analyzed. The model, consisting of mutually-exclusive epidemiological compartments representing the human and vector dynamics, has a locally-asymptotically stable, disease-free equilibrium (DFE) whenever the associated reproduction number (Ro) is less than unity. It is shown, using a Lyapunov function and LaSalle Invariance Principle that the DFE of the model, in the absence of dengue-induced mortality, is globally-asymptotically stable whenever the threshold is less than unity. Using a Krasnoselskii sub-linearity trick, it is shown that the associated unique endemic equilibrium is locally-asymptotically stable when it exists. Various treatment strategies based on the use of present (limited) control measures are considered. Numerical simulations of the model show that for high treatment rates, a universal strategy, with high level of effectiveness, can lead to dengue elimination in a community. (Received August 26, 2009)