Sensitivity analysis of dengue model with saturated incidence rate

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Keywords: Aedes aegypti; A. albopictus; Dengue fever; Reproduction number; Control measures; Sensitivity Analysis; Aquatic stage; Adult stage.

Dengue is a flavivirus, transmitted to human through the bites of infected Aedes aegypti and A. albopictus mosquitoes. In this paper, a new system of ordinary differential equations which incorporates saturated incidence function was analyzed, vector biting rate and control measures at both the aquatic and adult stages of the vector (mosquito). The stability of the system was examined for the dengue-free equilibrium via the threshold parameter (reproduction number) which was obtained using the Next generation matrix techniques. Routh Hurwitz criterion along together with Descartes rule of signs change established the local asymptotically stability of the model whenever $0 < R \leq 1$ and unstable otherwise. Sensitivity analysis was carried out and the numerical simulation reveals that increasing the proportion of human antibody and putting into place a control strategy that minimize the vector biting rate are enough to reduce the infection of the disease in the population to its barest minimum.