MATHEMATICAL MODELING APPLIED TO UNDERSTAND THE HOST-PATHOGEN INTERACTION OF HIV INFECTION IN BANGLADESH

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Abstract. The most urgent public health problem today is to devise effective strategies to minimize the destruction caused by the AIDS epidemic. The understanding of HIV infection through mathematical modeling have made a significant contribution. The interaction of host to pathogen have been determined by fitting mathematical models to experimental data. In Bangladesh, the increasing rate of HIV infection comparing to the other countries of the world is not so high. Among the most at risk population of Bangladesh the HIV prevalent is still considered to be low with prevalence $< 1\%$. In this paper, the current situation of HIV infection in Bangladesh have been shown and a mathematical representation of HIV has been discussed. We have determined the basic reproduction number R_0 and shown the local and global stability at disease free and chronic infected equilibrium points. Also we have shown that if the basic reproduction number $R_0 \leq 1$, then HIV infection is cleared from T cell population and it converges to disease free equilibrium point. Whereas if $R_0 > 1$ then HIV infection persists.

Full text

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