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In this study we consider the dynamics of a vector-transmitted disease under two conditions. First, we look at time dependent prevention and treatment efforts, where optimal control theory is applied. Then, we consider an autonomous model to establish conditions for the global stability of the disease-free equilibrium point of the model. Using analytical and numerical techniques, it is shown that there are control efforts for treatment and prevention of host-vector contacts with minimal cost of implementation. Data from malaria disease is used in the numerical simulation of the autonomous and the optimal control models. (Received September 01, 2008)