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A Malaria-HIV/AIDS Co-infection Model with Optimal Treatment and Insecticide-treated Bednets

Eric Numfor
Augusta University, enumfor@augusta.edu

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The concurrent use of multiple strategies has been recommended as an effective strategy to reduce malaria and its burden. In this talk, we present a mathematical model for malaria-HIV/AIDS co-infection and control in which malaria treatment, insecticide-treated bednets, and HIV/AIDS treatment are incorporated. The existence of a backward bifurcation is established. The optimal impact of malaria treatment, insecticide-treated bednets and HIV/AIDS treatment are assessed, by formulating and analyzing an optimal control problem to gain qualitative understanding on how different combinations of these controls should be used to reduce disease prevalence in a malaria-HIV/AIDS endemic setting.