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MODELING TWO-STRAIN DENGUE TRANSMISSION

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ABSTRACT

In this talk, we examine two-strain dengue models that capture the interactions between human and mosquito populations. The proposed models incorporate the possibility of reinfection with a different strain and vertical transmission of the virus from adult mosquitoes to their offspring. We discuss the local stability of the disease-free equilibrium, the existence and local stability of endemic equilibria in the single-strain case, as well as the existence of two-strain endemic equilibria. Remarkably, some of these results are obtained despite the non-constant size of the mosquito population. To support our findings, we present numerical simulations using realistic dengue parameters that reflect biological phenomena.