Optimal control problems of mosquito-borne disease subject to
changes in feeding behavior of Aedes mosquitoes

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Abstract contents:

Dengue viruses (DENV) are transmitted to humans by the bite of Aedes mosquitoes. It is known that
dengue virus infection in Aedes aegypti female mosquitoes makes a change in the feeding behavior of the
infected mosquitoes. In this study, using the forces of infection, we incorporated the effect of changes in
the feeding behavior of mosquitoes into the standard vector-borne SIR-SI model. It has been proved that
both a single-strain model and a two-strain model exhibit forward bifurcations. Moreover, optimal
implementations of control with specific prevention measures for dengue transmission are analyzed. As a
result we found that more implementation of controls on the secondary infection of humans should be
considered for the behavioral changes in feeding of the infected mosquitoes.