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Abhishek Pandey* (abhishe@g.clemson.edu), **Jan Medlock** and **Anuj Mubayi**. *The introduction of dengue vaccine may temporarily cause large spikes in prevalence.*

A dengue vaccine is expected to be available within few years. Once vaccine is available, policy makers will need to find suitable vaccine-allocation policies. Mathematical models of dengue transmission predict complex temporal patterns in prevalence, driven by seasonal oscillations in mosquito abundance, and may include a transient period immediately after vaccine introduction where prevalence can spike higher than in the pre-vaccine period. These spikes in prevalence could lead to doubts about the vaccination program among the public and among even decision makers, possibly impeding the vaccination program. Using simple dengue-transmission models, we show that the presence of transient spikes in prevalence is a robust phenomenon that occurs when vaccine efficacy and vaccination rate are not either both very high or both very low. Despite the presence of transient spikes in prevalence, the models predict that vaccination does always reduce the total number of infections in the 15 years after vaccine introduction. Policy makers should prepare for spikes in prevalence after vaccine introduction to mitigate the burden of these spikes and any resulting perception of inefficacy of the vaccine program. (Received February 09, 2014)