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Impact of viral drift on vaccination dynamics and patterns of seasonal influenza

Much research has been devoted to the determination of optimal vaccination strategies for seasonal influenza epidemics. However, less attention has been paid to whether this optimization can be achieved within the context of viral drift. The purpose of this work is to investigate the effect of viral drift on optimal vaccination for minimizing the total number of infections. We developed a mathematical model that links different intra-seasonal dynamics of vaccination and infection. Given the uncertainty in the timing and nature of antigenically drifted variants, our findings highlight the difficulty in determining optimal vaccination dynamics for seasonal epidemics. Our study suggests that the short- and long-term impacts of vaccination on seasonal epidemics should be evaluated within the context of population-pathogen landscape for influenza evolution. This is a joint work with S. Moghadas.