Optimal Control on a Discrete Time Influenza Model

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Abstract

A discrete time Susceptible - Asymptomatic - Infectious - Treated - Recovered (SAITR) model is introduced in the context of influenza transmission. We evaluate the potential effect of control measures such as social distancing and antiviral treatment on the dynamics of a single outbreak. Optimal control theory is applied to identify the best way of reducing morbidity and mortality at a minimal cost. The problem is solved by using a discrete version of Pontryagin's maximum principle. Numerical results show that dual strategies have stronger impact in the reduction of the final epidemic size.