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Jane M Heffernan* (jmheffer@yorku.ca), 4700 Keele St, Mathematics & Statistics, York University, Toronto, Ontario M3J 1P3, Canada, and **Suma Ghosh**. *Characterization of H1N1 pandemic waves under various mitigation strategies.*

Influenza pandemics typically cause multiple waves of morbidity and mortality over a few months or years. The size of these successive waves depends on intervention strategies (i.e. drug therapy and vaccination), mutation, enhanced transmissibility and acquired immunity from previous infections. While antiviral agents are used as a primary control measure during the early stages of a pandemic, both vaccine and drug therapy can be used as preventive control measures in subsequent waves, however, the effects of these control measures in successive waves will be impacted by the existence of acquired immunity from previous waves of infection. The combined effect of drug therapy, vaccination and acquired immunity has not been studied. We have developed a multi-compartmental SIR model of two consecutive waves of an influenza pandemic to characterize disease dynamics under the effects of drug therapy, vaccination and acquired immunity. Using parameter values from the H1N1 pandemic influenza literature, numerical simulations demonstrate that depending on the availability of antivirals and vaccine in the second wave, different treatment strategies should be used in the first wave so as to maximize the acquired immunity in the population. (Received January 11, 2012)