

5007-92-269

Paula A Gonzalez Parra* (pagonzalez@uao.edu.co), Calle 25 # 115-85, Cali, Valle ,
Colombia, and **Martine Ceberio** and **Carlos Castillo-Chavez**. *Interior Point Methods For a
Multi-Group Discrete Time Influenza Model.*

We formulated a discrete susceptible-infected-treated-recovered (SITR) model. We evaluated the potential effect of control measures, such as social distancing and antiviral treatment in the context of a single influenza outbreak. The potential effect of antiviral treatment was evaluated by considering both unlimited and limited supply. The role of heterogeneity in the population was considered. The total population was divided into subgroups according to activity or susceptibility levels. The goal was to determine how treatment doses should be distributed and how social distancing should be implemented in each group in order to reduce the final epidemic size. The optimal control problem was solved by using the primal-dual interior-point method. This approach allowed the inclusion of constraints more efficiently. We found that the use of single and dual strategies (social distancing and antiviral treatment) resulted in reductions in the cumulative number of infected individuals. In the case of limited resources, our results showed that in order to control the epidemic, most of the resources must be utilized at the beginning of the epidemic until all the resources exhausted. (Received May 10, 2013)