

1067-49-569

**Sunmi Lee\*** (mathever@gmail.com), School of Human Evolution and Social Change, Arizona State University, Tempe, AZ 85282. *Modeling optimal age-specific vaccination strategies against pandemic influenza*. Preliminary report.

In the context of pandemic influenza, the immediate and effective implementation of control measures is of great concern for public health officials around the world. In particular, the role of influenza vaccines should be considered as part of any pandemic preparedness plan. In this paper, we use a mathematical model that incorporates age-structured transmission dynamics of influenza to evaluate optimal vaccination strategies in the context of the Spring 2009 A (H1N1) pandemic in Mexico. We extend previous work on age-specific vaccination strategies to time-dependent optimal vaccination policies by solving an optimal control problem with the aim of reducing the overall number of symptomatic cases over the course of a single pandemic wave. Optimal vaccination policies are computed and analyzed under different vaccination coverages and different transmissibility levels ( $R_0$ ). The results suggest that optimal vaccination can be achieved by allocating most vaccines to young adults (20-39 y) followed by school age children (6-12 y) in the Mexican population. In addition, our results underscore the need of an universal influenza vaccine since this leads to the minimization of the overall number of symptomatic cases. (Received September 09, 2010)