influenza, reducing morbidity and mortality rates not only for those vaccinated, but also for the entire population by reducing the spread of the virus. In the event of a pandemic, an individual located in the center of the network is more likely to become infected. Thus, vaccinating such individuals before others would be more efficient in reducing the influenza burden. METHODS: We show that immunizing those who have been infected in the previous season, especially before the peak of the disease, can substantially reduce infection rates for a wide range of influenza viruses. Using the Susceptible Infected Recovered (SIR) compartmental model we ran 2,100,000 simulations, each reflecting two successive influenza seasons over a 1.5 million population contact network based on the Porton-Down social network. The CDF were considered for a Random Vaccination Policy (RVP) and when using a vaccination policy prioritizing first those who were infected in the previous season especially before the peak (FPFP). RESULTS: When no vaccination is offered, individuals who become infected in the previous season have a high probability of becoming infected in the following season. Accordingly, FPFP can be achieved easily by sending pamphlets, telephone reminders or even a previous season on an individual in determining future vaccination policy. The PFIP and PFIF can be achieved by sending pamphlets, telephone reminders or even a previous season on an individual in determining future vaccination policy. The PFIP can be achieved by sending pamphlets, telephone reminders or even a previous season on an individual in determining future vaccination policy.