Optimizing Distribution of Pandemic Influenza Antivirals

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Keywords: antivirals, 2009 H1N1, pandemic influenza, optimization, math-modeling

Mass distribution of antiviral medications is central to many national and international pandemic influenza response plans. These drugs are used both prophylactically, to prevent infection, and therapeutically, to lessen the severity and duration of illness. In the United States, large stockpiles of antivirals are maintained by both federal and state public health agencies in preparation for future pandemics. During the 2009 H1N1 influenza pandemic, many states relied on commercial pharmacies to distribute stockpiled antivirals fairly and effectively to geographically and demographically diverse populations. Here, we present a data-driven method for optimizing pharmacy-based distributions of antiviral medications during future pandemics, in terms of overall access for the target population, and apply it to the state of Texas in the U.S. We compare the access achieved by the model solutions to that actually achieved by the Texas Department of State Health Services (DSHS) during the 2009 H1N1 pandemic. We find that, in general, the major national chains provide sufficient access in highly populated areas, while independent pharmacies are essential for reaching less populated areas. This model was developed jointly by scientists and public health officials, and is now available as a decision-support tool for Texas DSHS via a user-friendly web-based interface.