Researchers tackle influenza by studying human behavior

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Researchers from The University of Texas at Austin will participate in a $3 million, five-year grant from the National Institutes of Health (NIH) to fight influenza and other diseases by creating models that simulate the complex interplay between human behavior and the spread of disease.

The grant is part of the Models of Infectious Disease Agent Study (MIDAS) program, a national network of researchers using mathematical models to help public health officials better predict, intervene and contain contagious diseases.

Researchers from Texas include Lauren Ancel Meyers, a mathematical biologist in the College of Natural Sciences and Paul Damien, a mathematician in the McCombs School of Business. Meyers is leading the project jointly with Allison Galvani at Yale University.

The group already has begun work this summer. They are trying to understand how to best use the national stockpile of flu antiviral medications such as Tamiflu and Relenza for the current H1N1 pandemic (swine flu). Between state and federal holdings, there are approximately 80 million courses of these drugs available.

"Who should be taking these antivirals? And when? What are the optimal choices to best save lives and prevent the spread of the swine flu ?" Meyers said. "Our models can help answers those questions."

The group has also launched a survey-based study to learn how perceptions and behavior evolve as information about the H1N1 pandemic spreads around the globe through the media.

Meyers said that as people change things like travel plans, they in turn change how the disease spreads.

Additionally, Damien said, "Take school closures as an example. It's challenging to assess when and where to close schools. Based on what metric? Percent infected? Percent likely to be infected? Only by using mathematical methods can we best quantify these uncertainties. The MIDAS program rightly encourages the use of mathematics to make better, informed decisions, and we're excited to be involved in such an effort."

Thus, there are many factors that can affect the spread of diseases including population densities, closures of schools and public places, how drugs and vaccines are distributed, cost of treatments and people's perceptions of vaccines.

"Our models will combine these factors and allow us to design public health policies that not only use resources effectively but also influence individual decision making to prevent the transmission of diseases like flu," Meyers said.

Source: University of Texas at Austin (news : web)

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