

New software to aid early detection of infectious disease outbreaks

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A newly released software program will let health authorities at the site of an infectious disease outbreak quickly analyze data, speeding the detection of new cases and the implementation of effective interventions.

The program, called TranStat, was developed by a team of epidemiologists and computer scientists from the Models of Infectious Disease Agent Study (MIDAS), an international program supported by the National Institutes of Health (NIH) to build computational models for studying disease spread.

“A main goal of MIDAS is to make the models developed by the researchers available to the public health community and policymakers,” said Jeremy M. Berg, Ph.D., director of the National Institute of General Medical Sciences, the NIH component that funds MIDAS. “TranStat is a great example of how MIDAS is providing tools to help communities prepare for emerging infectious disease outbreaks.”

Available for free and downloadable at www.midasmodels.org, TranStat can be used by public health officials to systematically enter and store infectious disease data. These data include details about the infected individuals, such as their sex, age, and onset of symptoms; their close contacts; and any interventions they might have received. The program also prompts the field personnel to enter details about exposed but uninfected individuals. The system does not collect names or other personally identifying information.

The computer program uses this information to statistically determine the probability that people contracted the disease from each other, a driving factor in the spread of infections. TranStat also estimates in real time the average number of people an individual could infect and the rate at which that infection occurs in a particular setting. This information can help health officials develop and swiftly implement strategies that thwart further spread while they conduct additional studies.

"We've made TranStat portable and easy to use, so field officers can enter, edit, and analyze data as an outbreak progresses," said Diane Wagener, Ph.D., a program manager at RTI International, an independent, nonprofit research organization in Research Triangle Park, N.C., which helped develop the user interface.

Ira Longini, Ph.D., a biostatistician at the Fred Hutchinson Cancer Research Center and the University of Washington in Seattle, directed the research behind TranStat. He and his research team have used the underlying methods and software to determine that the H5N1 avian flu virus probably spread between members of an extended family in Indonesia in 2006. According to the results published in the September 2007 issue of *Emerging Infectious Diseases*, the transmission was not sustained.

"The faster we learn about emerging infectious diseases and their characteristics, the quicker we can contain and mitigate them," said Longini. "TranStat will help us do this by standardizing data collection and analysis."

Future software enhancements that will allow field personnel to enter more refined data about the affected population and their social networks are under way.

Source: NIH/National Institute of General Medical Sciences

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