

Researchers study the human factor in spread of pandemic illness

May 12 2009

Industrial engineers Sandra Garrett of Clemson University and Barrett Caldwell of Purdue University have proposed a new system to warn of an impending pandemic by monitoring signals in human behavior. The system could result in using a simple icon on a television screen to warn of future phases of an outbreak of an illness such as the flu.

Researchers agree it is extremely difficult to identify a [pandemic](#) event before it is under way and spreading from person to person, yet the timeliness of this early detection is critical for an effective response and disaster-mitigation strategy. History and computer-generated simulations show that the speed in which a response strategy is initiated, even more than the specific strategy itself, will have the largest influence in reducing the overall impact of a pandemic. Given the importance of rapid response, identifying the specific event phases and the triggers that indicate a need for action is essential.

"We know that delays in identification are critical," Garrett said. "Once any significant number of cases are identified, especially in high-transit areas, the pandemic spread is virtually impossible to control. We have proposed a system that monitors what humans are doing leading up to a pandemic to increase the likelihood of early detection."

Garrett said the system would monitor such activities as an increase in flu-related medicine purchases or a spike in Internet use for certain types of flu-related information. These early indicators are important to notice since the spread of [influenza](#) can occur before someone begins to show

symptoms of being sick and before they seek medical attention. Since a pandemic does not occur at a single point in time, but rather evolves, it is often difficult to detect an outbreak from physician or local health-department reports of an increase in flu cases.

"Understanding these phases might be a way to overcome a fundamental hurdle in controlling a pandemic," said Caldwell. "Conventional approaches require public-health officials to know when certain events leading to pandemic begin. The problem is it's often too late to do much about it."

The researchers say planning for an illness can start at an earlier phase so that policymakers, government officials and the public can react sooner to control it. They envision a system that uses icons on television screens similar to those used for weather advisories warning about the phases of the illness and appropriate public responses.

Garrett said there is much that the general population can do to prepare for a pandemic outbreak such as the flu, but many people do not fully understand influenza, what they can do to prepare and how to appropriately respond during a severe outbreak.

"The more we can do to educate our community, the better," said Garrett. "The social impact of a panicking populace can be just as hazardous as the virus, for example, the worried healthy folks flooding emergency rooms, using up valuable medical resources and possibly becoming exposed to the virus while there."

Garrett said that the basic underlying research is not limited to pandemic influenza scenarios, but could also be used in many other types of disasters, such as hurricanes or winter storms.

"It's about communication," Garrett said. "The more we know and the

sooner that we know, the better for everyone."

It also is critical to keep the information fresh with clearly identified frequent updates about the event. She said that when people are not given updated information, they begin to make assumptions that often are incorrect, which leads to discounting some of the information that is available.

The research by Garrett and Caldwell on the "Human Factors Aspects of Planning and Response to Pandemic Events" will be presented in a research paper June 2 at the Industrial Engineering Research Conference in Miami.

They also have collaborated with health officials and hospitals in the test state of Indiana to determine the feasibility of an alternative-care system that may require activation once a pandemic illness reaches a local area. The study looks at how authorities react, what facilities are available that may be needed to care for pandemic patients and how to communicate timely information between authorities and their planning partners and to the general public. The Indiana State Department of Health funded the research.

Source: Clemson University ([news](#) : [web](#))

Citation: Researchers study the human factor in spread of pandemic illness (2009, May 12) retrieved 2 May 2024 from

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