Study outlines measures to limit effects of pandemic flu on nursing homes

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The greatest danger in a pandemic flu outbreak is that it could spread quickly and devastate a broad swath of people across the United States before there is much of a chance to react. The result could be a nation brought to its knees by a disease run rampant.

Among those most vulnerable to a pandemic flu outbreak are the 2.5 million residents of the nation's 18,000 residential care (nursing home) facilities. Because there are few anti-virals and no vaccines available to combat such a flu epidemic, these facilities most likely will try to prevent introduction of the flu through non-pharmaceutical interventions (NPI), like the use of masks, social distancing, isolating symptomatic persons, etc.

But among NPI interventions, which methods or combinations of methods will work and be effective in keeping the flu outside the walls of a facility or keep the flu spread to a minimum among a population that literally will be sitting ducks in the path of the disease?

Now, a team of researchers, including one from Arizona State University, has taken a major step in determining what will work by developing mathematical models and testing scenarios that show which NPIs are appropriate for which levels of pandemic flu. Their work is published in an early on-line edition (July 21) of the journal *Proceedings of National Academy of Sciences*.

"Our work is the first to provide a flexible road map for prevention and

protection of vulnerable populations living in residential care facilities, said Gerardo Chowell-Puente, an assistant professor in ASU's School of Human Evolution and Social Change.

"We found that something previously considered implausible – the protection of a health care institution against pandemic influenza by using only non-pharmaceutical measures – may be possible and may be practical," Chowell-Puente said. "We want this work to get those concerned with mitigating the impact of pandemic influenza in such facilities to evaluate and consider implementation of the recommendations implicit in our study."

In "Protecting residential care facilities from pandemic influenza," authors Miriam Nuño of UCLA and the Harvard's School of Public Health; Tom Reichert of the Entropy Research Institute; Abba Gumel of the University of Manitoba along with Chowell-Puente, say their roadmap provides an important planned first line of defense for the pandemic flu.

"Currently, most facilities do not have a ready to implement plan in place should a pandemic take place," the researchers said. "Our work details a set of simple interventions that seem workable and may be easily implemented by current staff members."

Five types of NPIs were evaluated. They included: screening visitors and staff who leave and then return to the facility; isolating symptomatic residents; placing restrictions on visitors, like reducing visit times or having them use electronic communications devices or communicating from behind transparent impermeable barriers; modifying work schedules, which could include four full days on site followed by four full days off site with a period of isolation from the community for a portion of the time off site; and precautions taken by staff and visitors to reduce their risk of infection, like washing hands and using protective

masks.

"Overall, we found that conventional NPIs sufficed to curtail only mild outbreaks, and that higher level of NPIs requiring greater social restrictions and higher levels of cooperation were needed to manage more severe outbreaks," said Chowell-Puente, who evaluated the NPIs effectiveness through the use of mathematical models for the study.

"The biggest surprise in our study was identifying the critical role that staff plays in controlling the spread and preventing the introduction of disease in the facilities," said lead author Miriam Nuño.

"Many residential facilities (like nursing homes) are chronically understaffed," Nuño added. "Our research shows the current working demands of staff need to be improved if we hope to improve our preparedness plans."

Some of the improvements, the researchers note, include more regular work hours and schedules for care givers, as well as other basic benefits, like paid sick days.

"Our research shows that work schedules that include multiple days on-site at the facility are the key to surviving pandemics. With that practice, employees must go into isolation for several days at home before coming back to work. But, the benefits from longer work- and off-periods incorporating isolation periods can only be had if employees can be fully engaged in the protection of their institution," the researchers stated.

"Facilities must eliminate disincentives. For example, employees sick themselves with the flu or forced to care for afflicted family members must be paid for time away. A single act of non-cooperation can bring down an entire facility. In return, those employees who recover become immune, become fully available for further service and no longer

represent a threat for introducing the virus," they added.

Source: Arizona State University