

Vaccine for stomach flu may be possible, research shows

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Every year, millions of people are infected with noroviruses - commonly called “stomach flu” – often resulting in up to 72 hours of vomiting and diarrhea. While most people recover in a few days, the symptoms can lead to dehydration and - in rare cases, especially among the elderly and infants - death.

Now, researchers at the University of North Carolina School of Public Health have discovered that the virus mutates genetically, similar to the virus that causes influenza. And, like flu, a vaccine could be possible.

“One of the mysteries of medicine has been why do they keep infecting people when you’d think we’d be developing immunity,” said Lisa Lindesmith, one of the lead authors of the study, “Mechanisms of GII.4 Norovirus Persistence in Human Populations,” published today in the online medical journal *PLoS Medicine*. “What we’ve found is that the GII.4 arm [of the noroviruses] keeps changing. Whenever we’re seeing big outbreaks of norovirus, we’re also seeing genetic changes in the virus.”

Noroviruses are the leading cause of viral acute gastroenteritis. They are highly contagious, often causing epidemic outbreaks in families and communities, on cruise ships, in hospitals and in assisted living facilities. The viruses are especially hard on the elderly – in 2006, 19 deaths were associated with norovirus acute gastroenteritis in long-term care facilities in the United States. Often, infection can mean many miserable hours, with time lost from work, school and other activities. There is no

treatment to stop the infection.

The virus, first isolated from an outbreak in an elementary school in Norwalk, Ohio, in 1968, is common worldwide. The researchers analyzed the relationship among the sequences of certain genes encoding the GII.4 norovirus strains that have been isolated over the past 20 years. They found that the virus evolved irregularly, and when new strains emerged, they often cause epidemic outbreaks.

Authors from UNC include Lindesmith, an epidemiology research specialist in the School of Public Health; Eric Donaldson and Anna LoBue, both doctoral students and research assistants in microbiology and immunology in the UNC School of Medicine; Jennifer Cannon, doctoral student in environmental sciences and engineering; and Ralph Baric, Ph.D., a professor in the School of Public Health's epidemiology department and in the School of Medicine's microbiology and immunology department. Authors from the Centers for Disease Control and Prevention include Du-ping Zheng, Ph.D. and Jan Vinje, Ph.D., head of the CDC's National Calicivirus Laboratory.

“Noroviruses are very contagious,” Lindesmith said. “It may only take one or two viral particles to become infected. Good hand washing is critical when the virus is present. A vaccine may someday have an important role, too, especially among the elderly and other people particularly vulnerable to the effects of the illness.”

Source: University of North Carolina at Chapel Hill

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