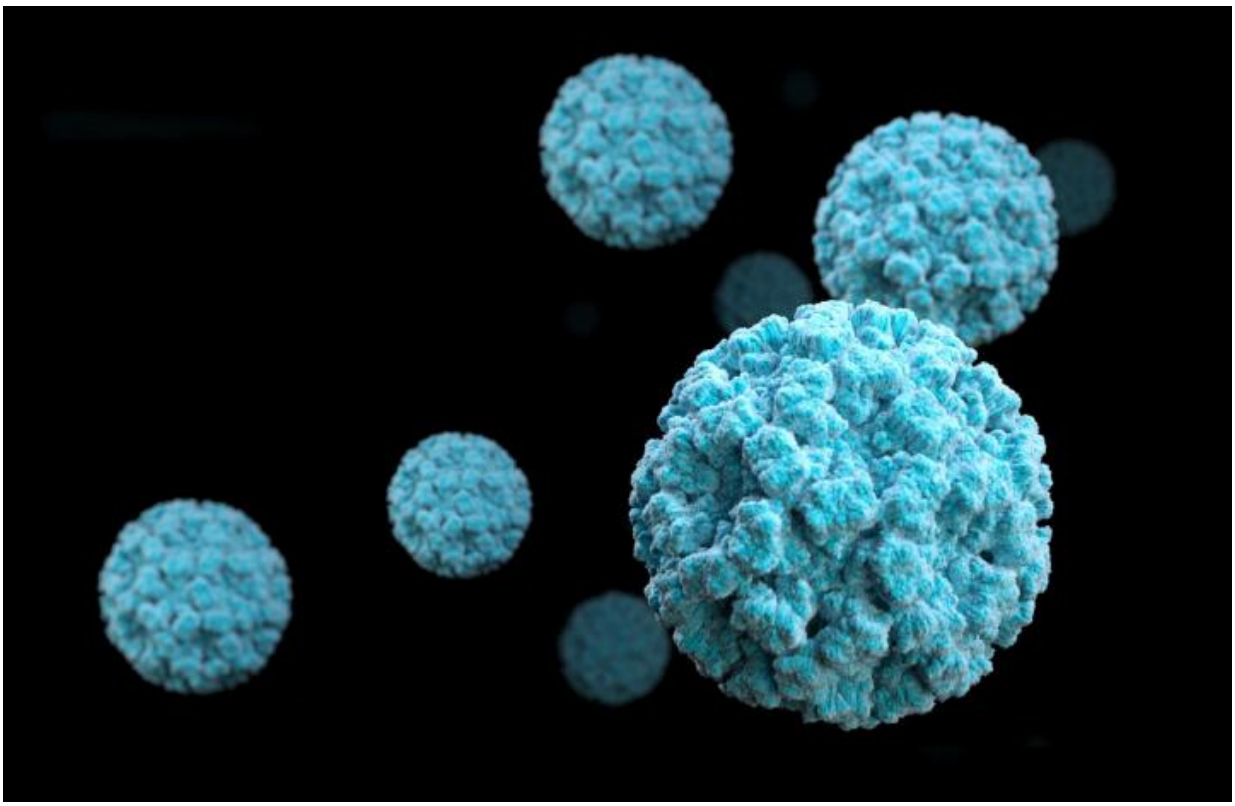
New study sheds light on norovirus outbreaks, may help efforts to develop a vaccine

November 15 2018



Norovirus. Credit: CDC

Outbreaks of norovirus in health care settings and outbreaks caused by a particular genotype of the virus are more likely to make people seriously

ill, according to a new study in The *Journal of Infectious Diseases*. Based on an analysis of nearly 3,800 U.S. outbreaks from 2009 to 2016, the research confirms several factors that can make norovirus outbreaks more severe and may help guide efforts to develop a vaccine to prevent this highly contagious disease.

Each year in the U.S., norovirus causes an estimated 19 to 21 million cases of vomiting and diarrhea, between 56,000 and 71,000 hospitalizations, and 570 to 800 deaths, with much of the disease burden falling on young children and older adults, according to the Centers for Disease Control and Prevention (CDC). The disease spreads through direct contact with an infected person, consuming contaminated food or water, or touching contaminated surfaces.

In the new study, researchers linked, for the first time, data from a national outbreak reporting system and a laboratory surveillance network that collects data about norovirus genotypes associated with confirmed outbreaks. Their analysis, the largest of its kind, included 3,747 norovirus outbreaks affecting more than 100,000 people from 2009 to 2016. Severe outcomes, including hospitalizations and deaths, were more frequent in outbreaks caused by a specific genotype of norovirus, genogroup II type 4 (GII.4), and in outbreaks in health care settings, including hospitals, long-term care facilities, and outpatient facilities.

In a related editorial commentary that appears with the study in The *Journal of Infectious Diseases*, Geoffrey A. Weinberg, MD, of the University of Rochester School of Medicine and Dentistry in New York, noted that research of this kind helps advance our understanding of norovirus and the outbreaks it can cause. "Their data confirm that the notion of noroviruses simply being 'a cruise ship virus' or an occasional foodborne winter vomiting illness is outdated," Dr. Weinberg wrote in the commentary.

The findings confirm previous research about the severity of GII.4 norovirus outbreaks and suggest that future vaccines against norovirus should include these genotypes, said the lead author of the study, Rachel M. Burke, MPH, Ph.D., of CDC. The study results also suggest that targeting these vaccines for use in people in health care settings may help reduce hospitalizations and mortality associated with norovirus. Although there is no currently available vaccine that protects against norovirus, several candidate vaccines are in the development pipeline.

"Linking data from these two different sources gives us a really powerful tool, a different way to look at norovirus outbreaks in the U.S., and a better understanding of some of the interactions between what is going on with the virus versus the host versus the environment," Dr. Burke said.

Fast Facts

- Norovirus, a highly contagious virus, is the leading cause of vomiting and diarrhea from acute gastroenteritis in the U.S.
- An analysis of norovirus outbreaks found that severe outcomes, including hospitalizations and deaths, were more frequent in outbreaks caused by a specific genotype of norovirus, genogroup II type 4 (GII.4).
- Severe outcomes were also more common in outbreaks occurring in health care settings, including hospitals, long-term care facilities, and outpatient facilities.
- These findings may help guide efforts to develop and use vaccines that effectively protect against norovirus disease.

More information: *The Journal of Infectious Diseases* (2018). DOI: 10.1093/infdis/jiy569

Provided by Infectious Diseases Society of America