

Norwalk Virus Fact Sheet

What is Norwalk virus? Nature [sic.] has created an ingenious bug in Norwalk. The round blue ball actually is a protein surrounding the virus's genetic material. The virus attaches to the outside of cells lining your intestine. Then it transfers its genetic material into that cell. There it reproduces, finally killing the human cell to release new copies of it that attach to more cells of your intestine's lining.

Norwalk Virus is part of a family of viruses called "small, round structured" viri because of their appearance. The family has also been named because of structure: Norwalk is a "calicivirus." The name derives from the latin chalice or calyx meaning cuplike referring to the indentations of the viruses surface, shown above.

The family of caliciviruses consists of several distinct groups of viruses that have been named after the places where the outbreaks occurred. In the United States, the Norwalk and Montgomery County viruses are related but distinct from the Hawaii and Snow Mountain viruses. In children with gastroenteritis, Toronto virus is the second most common.³

Norwalk virus was identified in 1972 after an outbreak of gastrointestinal illness in Norwalk, Ohio. Later, these other viruses with similar features were described and called Norwalk-like viruses.

Common names of the illness caused by the Norwalk and other small round structured or caliciviruses are viral gastroenteritis, acute nonbacterial gastroenteritis, food poisoning, and food borne infection. This illness occurs worldwide. Humans are the only known hosts. The viruses are passed in the stool of infected persons. Of viruses, only the common cold is reported more often than viral gastroenteritis.¹ Norwalk and Norwalk-like viruses are increasingly being recognized as leading causes of food borne disease in the United States.

Many oyster-related outbreaks of intestinal illness linked to Norwalk-like viruses have been reported in Louisiana, Florida, Maryland, and other states where oyster harvesting is common. In 1993, 73 people in Louisiana and about 130 others in the United States who ate oysters from Louisiana became ill. A malfunctioning sewage system was the cause of an outbreak in 1996. An outbreak in 1997 was linked to sewage from oyster-harvesting boats. There is an apparent outbreak occurring following an Oscar party in Hollywood in 2002. Large outbreaks have occurred. The Centers for Disease Control and Prevention reported that 55,000 people at a major hotel got sick from the Norwalk virus being passed around over 34 days. In another large outbreak in Minnesota in 1982, one ill bakery worker was linked to an estimated 3,000 cases of gastroenteritis. ⁵

These viruses are generally transmitted via contaminated food. If the food was not already contaminated when procured, it may become contaminated from an infected food preparer. Virus is shed in large numbers in the vomit and stool of infected individuals, most commonly while they are ill. However, some individuals may continue to shed virus after they have recovered from the illness.² Norwalk virus may also be spread from person-to-person.⁴

¹Benson V, Merano MA.

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Current estimates from the National Health Interview Survey 1995. National Center for Health Statistics. Vital Health Stat 10. 1998; No. 199.

2Patterson T, Hutchin P, Palmer S. Outbreak of SRSV gastroenteritis at an international conference traced to food handled by a post symptomatic caterer. Epidemiol Infect, 1993; 111:157-162.

3Middleton PJ, Szmanski MT, Petric M. Viruses associated with acute gastroenteritis in young children. Am J Dis Child, 1977; 131:733.

4Caceres VM, Kim DK, Bresee JS, et al. A viral gastroenteritis outbreak associated with person-to-person spread among hospital staff. Infect Control Hosp Epidemiol, 1998;19:162-7.

5See the following link for a complete list of outbreaks reported to the CDC: http://www.cdc.gov/ncidod/dbmd/outbreak/us_outb.htm

What foods are involved?

A 1999 study suggests that Norwalk may cause more outbreaks of food-borne illness than bacteria and parasites. It is estimated that nearly 65% of nonbacterial gastroenteritis in the US is attributable to Norwalk and Norwalk-like viruses. Approximately 181,000 cases occur annually, with no known associated deaths. People most often get Norwalk virus infection by swallowing infected food or water. Outbreaks in the United States are **often linked to eating raw shellfish, especially oysters and clams.** Steaming does not kill the virus or prevent its transmission.¹ Shellfish become contaminated when their waters become contaminated, for example from raw sewage dumped overboard by recreational and/or commercial boaters. Shellfish are filter feeders and will concentrate virus particles present in their environment. Contaminated water, ice, eggs, salad ingredients, and ready-to-eat foods have been other sources of infection. ¹Kirkland KB, Meriwether RA, Leiss JK, MacKenzie WR. Steaming oysters does not prevent Norwalk-like gastroenteritis. Public Health Rep, 1996;111:527-30.

What are the symptoms? Usual symptoms include nausea, vomiting, diarrhea, and abdominal pain. Headache and low-grade fever may also accompany this disease. The disease is usually mild and brief. It will develop 24 to 48 hours after contaminated food or water is eaten and lasts for 24 to 60 hours. Infected people usually recover in 2 to 3 days without serious or long-term health effects. How is Norwalk virus infection diagnosed? Laboratory diagnosis is difficult. Diagnosis is often based on the combination of symptoms, particularly the prominence of vomiting, little fever, and the short duration of illness. Actual proof of infection requires research laboratory techniques in which virus particles are identified by electron microscopy from samples of stool or vomitus.

What is the treatment for Norwalk virus infection? No specific treatment is available. Persons who are severely dehydrated might need rehydration therapy.

How can I avoid this virus? The good news about this virus is that it does not multiply in foods as many other bacteria do. In addition, thorough cooking destroys this virus. To avoid this illness, make sure the food you eat is cooked completely. Shellfish (oysters, clams, mussels)

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pose the greatest risk and any particular serving may be contaminated; there is no way to detect a contaminated oyster from a safe oyster. With shellfish, only complete cooking offers reliable protection. Wash raw vegetables thoroughly before eating or preparing salads. If you are traveling in an area that appears to have polluted water, drink only boiled drinks or carbonated bottled beverages without ice.

Immunity to calciviruses is not permanent and reinfection can occur and infection may also spread from person-to-person. So, if you or another household member suffer a bout of gastroenteritis, then 1) wash hands with soap and warm water after toilet visits, before preparing or eating food; and after caring for the sick; 2) Exclude persons with gastroenteritis from the kitchen; and 3) always dispose of sewage in a sanitary manner.