

Virus Transmission

Noroviruses are transmitted primarily through the fecal-oral route, either by consumption of fecally contaminated food or water or by direct person-to-person spread.

Environmental and fomite contamination may also act as a source of infection. Good evidence exists for transmission due to aerosolization of vomitus that presumably results in droplets contaminating surfaces or entering the oral mucosa and being swallowed.

Noroviruses are highly contagious: as few as 10 viral particles may be sufficient to infect an individual. During outbreaks of norovirus gastroenteritis, several modes of transmission have been documented; for example, initial foodborne transmission in a restaurant, followed by secondary person-to-person transmission to household contacts. Although pre-symptomatic viral shedding may occur, shedding usually begins with onset of symptoms. While a person may continue to shed the virus for 2 weeks or more after symptoms resolve, for practical purposes persons who have been asymptomatic for 48 hours following a norovirus illness can resume normal work and other activities. Such individuals need to closely attend to infection control recommendations and personal hygienic practices to minimize the risk of further spread.

Management of Norovirus Infection

No specific therapy exists for norovirus gastroenteritis. Symptomatic therapy consists of replacing fluid losses and correcting electrolyte disturbances through oral and intravenous fluid administration.

Prevention

The most important means of preventing norovirus transmission and infection is appropriate isolation of symptomatic patients, and utilization of frequent and appropriate hand washing. Alcohol-based hand sanitizers ($\geq 62\%$ ethanol) may be helpful as an adjunct method of hand hygiene, but should not replace washing with soap and water.

For long term care facilities, confining ill residents to their room until 24 hours after their symptoms cease helps prevent further spread. If enough residents are ill, activities may need to be suspended. Excluding ill workers, especially those with patient care and food handling responsibilities, until 48 hours after symptoms cease will also prevent further spread.

Prevention of foodborne norovirus disease is based on the provision of safe food and water. Noroviruses are relatively resistant to environmental challenge: they are able to survive freezing, temperatures as high as 60°C, and have even been associated with illness after being steamed in shellfish. Moreover, noroviruses can survive in up to 10 ppm chlorine, well in excess of levels routinely present in public water systems.

Despite these features, it is likely that relatively simple measures, such as correct handling of cold foods, frequent hand washing and paid sick leave, may substantially reduce foodborne transmission of noroviruses.

Environmental surfaces that may be contaminated by norovirus should be disinfected using a chlorine bleach solution with a concentration of 1000-5000 ppm (5-25 tablespoons of household bleach [5.25%] per gallon of water) or [other disinfectant registered as effective against norovirus by the Environmental Protection Agency](#)  [84 KB/11 pages]. Evidence for efficacy against norovirus is usually based on studies using feline calicivirus (FCV) as a surrogate. However, FCV and norovirus exhibit different physiochemical properties and it is unclear whether inactivation of FCV reflects efficacy against norovirus.

Useful References/Fact Sheets

**GUIDELINE FOR THE PREVENTION AND CONTROL OF NOROVIRUS
GASTROENTERITIS OUTBREAKS IN HEALTHCARE SETTINGS**
[http://www.cdc.gov/hicpac/pdf/norovirus/Norovirus- Guideline-2011.pdf](http://www.cdc.gov/hicpac/pdf/norovirus/Norovirus-Guideline-2011.pdf)

[CDC: norovirus factsheet](#)

[Detail factsheet for healthcare facilities](#)

[Norovirus: Factsheet for food handlers](#)