TO: Primary care providers and local health departments

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RE: Preventing and Containing Norovirus Outbreaks.

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The Nebraska Department of Health and Human Services Office of Epidemiology is notifying health care providers of an increase in reported outbreaks of norovirus gastroenteritis. Since late November, the Office of Epidemiology has received reports of 7 confirmed or suspected norovirus outbreaks at long term care centers or assisted living facilities, schools and other group settings. This conforms to the known epidemiology of norovirus, with increased occurrence during the winter months. Due to the ability of norovirus to spread rapidly, we urge all health care providers to review the document below, and to focus on PREVENTING and CONTAINING norovirus in Nebraska. Our goal in sharing this is to forewarn and forearm the healthcare providers in these settings, and to prevent these outbreaks. Healthcare providers can assist in helping inform the population regarding the highly contagious nature of this virus, with high virulence with low infectious dose, and transmission via multiple routes. Any facility with three or more cases within 72 hours should report the problem to their local health department. In outbreak settings, up to five specimens should be submitted to the Nebraska Public Health Laboratory for testing at public health expense.

NOROVIRUS EXECUTIVE SUMMARY

Clinical Presentation

Incubation period: usually 24 to 48 hours (median in outbreaks 33 to 36 hours); can be as short as 12 hours

Duration of illness: usually 24 to 72 hours

Symptoms: vomiting, non-bloody diarrhea, abdominal cramps, nausea, low grade fever (if present)
Complications: Dehydration is the most common complication.

Sequelae: none

**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 48 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.

*For schools*, enforcing exclusion policies for students and staff will help prevent further spread. Food workers should be excluded until at least 48 hours after symptoms cease.
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. 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


CDC: norovirus factsheet
Detail factsheet for healthcare facilities
Norovirus: Factsheet for food handlers