



Infectious Disease Epidemiology Section
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Guidelines for the Control of a Suspected or Confirmed Outbreak of Viral Gastroenteritis in a Long Term Care Facility

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Norovirus is the most common cause of viral gastroenteritis. The virus is widespread and the disease affects all populations. Norovirus is transmitted by hands contaminated through the fecal-oral route, directly from person to person, through contaminated food or water, or by contact with contaminated surfaces or fomites. Aerosolized vomitus also has been implicated as a transmission mode. Because of high infectivity and persistence in the environment, transmission of noroviruses is difficult to control through routine sanitary measures. Although gastroenteritis caused by norovirus is usually self-limited, elderly persons, young children and those with severe underlying medical conditions are at increased risk for complications because of volume depletion and electrolyte disturbances.

The incubation time of norovirus is typically 24 to 48 hours but ranges from 10 to 72 hours, with illness usually resolving within 48 hours, although symptoms in some cases last up to three days. Symptoms include any or all of the following: abdominal cramps, nausea, vomiting, diarrhea, headache, joint pain and low-grade fever. Norovirus infection in healthy adults typically requires ingestion of at least 100 organisms; however, in experimental situations, symptoms have occurred after ingestion of as few as ten organisms. It is estimated that as many as 30 percent of persons with Norovirus in their stools are asymptomatic. In addition, post-symptomatic shedding of the virus can continue for up to 14 days after the resolution of symptoms.

The organism is an enveloped virus and thus is resistant to low concentrations of chlorine, such as would be found in swimming pools and drinking water and is also relatively heat resistant, surviving temperatures up to 60 degrees centigrade. The virus is inactivated by bleach at a 1:50 concentration (note: for comparison purposes regarding the hardiness of norovirus, viruses such as HIV and Hepatitis B are inactivated by concentrations of 1:100 bleach). Norovirus are more difficult to kill with ethanol than are vegetative bacteria and non-enveloped viruses. Ethanol in concentrations of 60 percent to 70 percent (the usual concentration in commercially available hand sanitizers), if correctly applied to all surfaces of the hands will eradicate more than 99 percent of the vegetative bacteria and non-enveloped viruses after 30 seconds of contact time. A full minute of contact time with 70% ethanol is required to inactivate norovirus. Only 30 seconds of contact time with 85 percent ethanol is required to inactivate caliviruses, but this concentration is not commercially available in a hand sanitizer.

Hand hygiene is the most important means of preventing the spread of infection. This statement is true for norovirus as well as for most other communicable diseases. However, hand hygiene to prevent the spread of enveloped viruses and spore-forming bacteria requires more than the usual effort.

The Centers for Disease Control and Prevention (CDC) recommends that handwashing consist of a minimum of 20 seconds of washing using soap and warm water. This 20 second time period should include friction to all hand surfaces. Sanitizing alcohol gels can be used as an alternative for hand-

washing, provided that the hands are “socially clean,” are free of organic matter and adequate contact time is observed.

These guidelines have been developed to help stop the spread of viral gastroenteritis in nursing homes. As these viruses are **highly contagious and very hardy**, stringent adherence is necessary. Preventive measures should be continued for at least three days after the outbreak appears over, since infected persons continue to shed the virus after they have recovered.

1. Isolate ill residents from others by confining them to their rooms (until three days after their last symptoms). Group ill people together if possible. Discontinue activities where ill and well residents would be together. Group activities should be kept to a minimum or postponed until the outbreak is over.
2. Ideally, keep all residents in their rooms and serve meals in rooms.
3. Ill staff should remain out of work for three days following the *cessation* of diarrhea and/or vomiting. If staff shortages are experienced, convalescent staff may be used in positions that have no or reduced contact with patients.
4. Minimize the flow of staff between sick and well residents. Staff should be assigned to work with either well residents or sick residents, but should not care for both groups. Staff who go back and forth between ill and well residents, play an important role in transmitting the virus from resident to resident.
5. Staff should wash their hands when entering and leaving *every* resident room.
6. Staff should wear gloves when caring for ill residents or when touching potentially contaminated surfaces. Gloves should be discarded and hands washed immediately after completing patient care.
7. Masks should be worn when caring for residents who are vomiting.
8. Use a disinfectant to frequently clean surfaces such as handrails, doorknobs, physical/occupational therapy equipment, etc. (Think of items that are touched regularly and make sure that they are cleaned frequently.) The recommended disinfectant is *freshly made* bleach solution (e.g. one cup bleach to nine cups of water). For surfaces that could corrode or be damaged by bleach, concentrated phenol solutions may be used (e.g., Amphyl, Mikro-Bac II). These should be mixed at twice the manufacturers’ recommended concentration to kill norovirus. **These chemicals can be dangerous. Follow all safety instructions.** Other effective cleaners include parachlorometaxyleneol (e.g., EcoTru), or peroxomonosulphate (e.g., Virkon). These should be mixed at the manufacturers' recommended concentrations. Commonly used quarternary ammonium disinfectants do not appear to be effective against norovirus.
9. Contaminated carpets should be cleaned with detergent and hot water, then disinfected with hypochlorite (if bleach-resistant) or steam-cleaned. Housekeeping staff should wear gloves and masks when cleaning contaminated or potentially contaminated surfaces or laundry. Contaminated linen and bed curtains should be carefully placed into laundry bags (to prevent generating aerosols), and washed separately in hot water for a complete wash cycle – ideally as a half-load for best dilution.
10. It may be prudent to discontinue visitation to the nursing home until the outbreak is over. If visitation is allowed, visitors should go directly to the person they are visiting and not spend

time with anyone else. They should wash their hands upon entering and leaving the room. They should not visit if they are sick.

CONTACT THE OFFICE OF PUBLIC HEALTH (OPH) FOR ASSISTANCE AS SOON AS AN OUTBREAK IS SUSPECTED AT 800-256-2748. OPH CAN ALSO PROVIDE FREE LABORATORY TESTING OF RESIDENTS AND STAFF DURING AN OUTBREAK.

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