

Norovirus Disinfection Recommendations for Facilities Experiencing an Outbreak

For background information on norovirus infections, see the Virginia Department of Health (VDH) Norovirus Fact Sheet at: <http://www.vdh.virginia.gov/Epidemiology/factsheets/pdf/Norovirus.pdf>

What is norovirus?

Norovirus is a type of virus that can infect people and cause vomiting and diarrhea. Some people may also have a low-grade fever. People can become infected when the virus enters their mouth by eating or drinking contaminated food or liquids, by touching their mouth after touching surfaces or objects contaminated with norovirus, or after having direct contact with another person who is infected without first washing their hands. The virus can spread easily and quickly from person to person. Infection control must be implemented quickly to limit disease spread.

How can norovirus infections be prevented?

The chance of becoming infected with norovirus can be reduced by:

- Practicing proper hand hygiene
 - Wash hands with soap and warm water frequently, as this is the most effective way to remove germs from the hands.
 - Use alcohol-based hand gels ($\geq 70\%$ ethanol) only if hands are not visibly soiled **and** if soap and water are not readily available.
 - Monitor and enforce hand hygiene compliance; this may require direct observation, reminders, and correction.

- Using personal protective equipment (PPE) appropriately
 - Wear gloves when handling food. Bare hands should **not** touch ready-to-eat foods.
 - Wear gloves and gowns when caring for ill persons or when touching potentially contaminated surfaces. A surgical (procedure) mask with eye-shield should be worn if contact with vomitus may occur.
 - Change gowns and gloves between contacts with individuals.
 - Remove and discard PPE carefully, either at the doorway of the patient's room or immediately outside the room. Dispose of PPE by first removing gloves, then goggles (if worn), then the gown, and then the surgical mask (if worn). After removing all PPE, immediately perform hand hygiene. Ensure that hands and clothes do not touch potentially contaminated surfaces or items.

- Reducing exposure to, and promptly disinfecting, contaminated surfaces and objects
 - Identify surfaces that are likely to become contaminated (e.g., bathrooms, areas with frequent hand contact, such as doorknobs, handrails, ice machines, etc.).
 - Remove potential sources of transmission, if possible (e.g., candy dishes, fruit baskets, etc.).
 - Develop a reasonable cleaning strategy that includes information on cleaning frequency and materials used.
 - Clean and sanitize potentially contaminated materials, such as ice buckets or water jugs, frequently (i.e., at least once every 24 hours during an outbreak).
 - Use a disinfectant to frequently clean all high risk surfaces and contaminated materials. For hard surfaces:
 - If visibly dirty, first clean with detergent and hot water, then disinfect.

- An inexpensive but effective disinfectant is a freshly-prepared dilute (unscented) bleach solution. For hard, non-porous environmental surfaces the Centers for Disease Control and Prevention (CDC) recommends a minimum concentration of 1,000 ppm with a one minute contact time. However, areas with high levels of soiling may require up to 5,000 ppm chlorine bleach. Commercially available sodium hypochlorite bleach is available in several concentrations. Follow manufacturer's instructions for diluting concentrated bleach with water to attain recommended concentrations. Since chlorine bleach may damage some materials, spot test an area to be cleaned before applying to a visible surface. Use only in well-ventilated areas.
 - For surfaces that food might contact, disinfection must be followed by 1) a clear-water rinse, and 2) a final wipe down with a dilute sanitizing bleach solution prepared in accordance with the bleach manufacture's recommendations. (Alternative products to bleach include accelerated hydrogen peroxide, chlorine dioxide, quaternary ammonium compounds, or 75% ethanol. A list of products registered with the U.S. Environmental Protection Agency (EPA) as disinfectants for norovirus is available at www.epa.gov/oppad001/list_g_norovirus.pdf. These products should be used according to the product label for concentration, contact time, and handling.
 - Clean body fluid spills (e.g., feces, vomit) potentially contaminated with norovirus using these steps:
 - Wear a disposable mask, gloves, eye-shield, and plastic disposable apron/gown. Disposable shoe covers may also be considered. Of note, environmental cleaning using a more concentrated disinfectant may require a heavier duty glove than a simple non-sterile latex/vinyl glove.
 - Use paper towels to soak up excess liquid. Transfer these and any solid matter into a plastic bag.
 - Clean the soiled area with detergent and hot water, using a disposable cloth.
 - Disinfect the contaminated area with a disinfecting agent.
 - Dispose of single-use gloves, eye-shields, apron, and cloths into a plastic waste bag. Place any re-usable personal protective equipment (e.g., gloves) in a separate plastic bag.
 - Remove mask and dispose into the waste bag.
 - Seal the waste bag.
 - Wash hands thoroughly using soap and water for at least one minute and then dry them thoroughly.
 - Wear disposable gloves and place the waste bag into another plastic bag and seal. Place the bag containing re-usable personal protective equipment (if applicable) into another plastic bag and seal.
 - Remove gloves. Wash hands thoroughly using soap and water for at least one minute and then dry them thoroughly.
 - Dispose of the waste bag. Deliver the re-usable personal protective equipment (if applicable) to the appropriate area for cleaning according to manufacturer's recommendations.
 - Heat disinfect (i.e., pasteurize) items that cannot be subjected to chemical disinfectants. A temperature greater than ~70°C (158°F) for up to 30 minutes may be necessary.
 - Remove norovirus from dishes and utensils through routine washing practices.
 - Manage contaminated carpets in a three step process: 1) clean with carpet detergent and hot water, 2) disinfect by applying an appropriate agent, if available, and 3) steam clean (158°F for five minutes or 212°F for one minute). The use of an appropriate disinfecting agent in the reservoir for the steam cleaning solution may be considered. Do **not** dry-vacuum carpets or buff hard-surface floors.
 - Be alert for the potential for cross-contamination, such as using the same cloth to clean bathroom surfaces and wipe down tables, and take steps to prevent cross-contamination from occurring.
- Laundering soiled clothing and linens

- Handle contaminated linens and bed curtains wearing disposable gloves and a disposable gown. Carefully place items directly into laundry bags and wash items separately in hot water and detergent for a complete wash cycle – ideally as a half load for best dilution.
- Following additional recommendations for facilities
 - Minimize the risk of transmission by reducing movement among residents, limiting interaction between groups of people (especially persons who are ill), reducing visitors, excluding ill individuals from the environment, etc.
 - Form a multidisciplinary planning committee or team to provide guidance and identify potential sources of transmission.
 - Develop communications (e.g., fact sheets, warning signs) for family, visitors, and staff to ensure awareness of and compliance with recommendations.

Contact the local health department to report suspected outbreaks – health department staff are available to provide detailed guidance on effective interventions.

For more detailed guidance on managing norovirus infections, consult the VDH norovirus webpage at <http://www.vdh.virginia.gov/Epidemiology/factsheets/pdf/Norovirus.pdf>.

For more detailed guidance on appropriate use of PPE, consult the CDC webpage at <http://www.cdc.gov/HAI/prevent/ppe.html>.

Note that these recommendations broadly outline intermediate disinfection for non-critical materials. For detailed guidance on cleaning, disinfection, and sterilization of the full range of materials that may be encountered in healthcare settings, consult the CDC [Guidelines for Disinfection and Sterilization in Healthcare Facilities, 2008](#).