

GUIDELINES FOR FACILITIES DURING OUTBREAKS OF NOROVIRUS/ GASTROENTERITIS: RECOMMENDATIONS AND PRECAUTIONS

Norovirus, formerly Norwalk-like virus, is the most common cause of epidemic nonbacterial gastroenteritis (inflammation of the stomach or intestines or both) in the world. It was first recognized as a cause of gastroenteritis in 1972¹, when it was detected in stool samples collected from infected elementary students and contacts during an outbreak in Norwalk, Ohio, in 1968². It was declared a member of the Caliciviridae family of viruses in 1993. It is now considered the most common cause of epidemic acute nonbacterial gastroenteritis in the world. Norovirus illness can be acquired at any time during the year, but it is most common in winter. Transmission is by person-to-person spread via the fecal-oral route or through contaminated food or water. Incubation period is 24-48 hours with a duration period of 12-60 hours. The symptoms of norovirus include nausea, vomiting, watery diarrhea (nonbloody), abdominal cramps, headaches, myalgia, malaise, and low-grade fever. Outbreaks have been reported in healthcare facilities, restaurants, schools, military ships, resorts, cruise ships, and barracks.

Burden of Norovirus illness in the United States

According to the Centers for Diseases Control and Prevention (CDC), each year on average, norovirus causes:

- 19-21 million cases of acute gastroenteritis
- 2.3 million outpatient visits clinic visits
- More than 450,000 emergency visits (especially children)
- 109,000 hospitalizations
- 900 deaths (mostly among young children and elderly people)

Infection control measures

- Encourage frequent hand washing with soap and warm water.
- Provide and encourage use of alcohol based (62%) waterless hand sanitizers when entering facility.
- Reinforce strict hand washing policy among staff.
- Do not allow symptomatic staff to work in the facility.
- Assure glove use for handling of all ready-to-eat foods and eating utensils.
- Increase frequency for cleaning/sanitizing "high touch" surfaces (e.g., door handles, light switches, handrails, faucets, ice machine, etc.) [see next page for facility-specific recommendations].
- Use disposable cleaning cloths; use a new cloth for each room/area cleaned.
- Dispose of vacuum cleaner bags between uses. Note: if an area is visibly soiled with fecal spillage or vomit do not vacuum-either steam clean or use hot water and detergent³.
- Do not enter food service area with items soiled with vomit or fecal spillage.

Sodium hypochlorite, commonly known as chlorine bleach or NaOCl, is considered the most effective disinfectant. To effectively disinfect, it is best to use chlorine bleach with 5.25% to 6.15% sodium hypochlorite. Avoid using alternative bleach types like non-scented or splash-less bleach as they may affect the necessary dilution concentrations. Do not mix bleach with other disinfectants or cleaning products.

During an outbreak, it is recommended to use the following chlorine bleach concentrations and mixing instructions⁴:

Suggested Uses	Suggested Cleaning Method	How to Make (1 cup= 240ml)	Strength (parts per million)
Porous surfaces such as wood floors or surfaces visibly soiled with vomit/feces	Chlorine bleach*	1 and ½ cup bleach in 1-gallon water	5000ppm (1:10 dilution)
Non-porous surfaces such as : handrails, tile, floors, counter-tops,sinks, toilets, doorknobs and other commonly handled items. <i>See facility specific section for suggested items.</i>	Chlorine bleach*	1/3 cup bleach in 1-gallon water	1000ppm (1:50 dilution)
Food/mouth contact items, stainless steel and toys mouthed by children	Chlorine bleach* then rinsed with water OR dishwasher at 170°F	1 Tablespoon of bleach in 1-gallon water	200ppm (1:250 dilution)
Carpet & upholstered fabrics visibly soiled with vomit or fecal spillage. Do <u>not</u> dry vacuum as viruses can become airborne.	Hot water and detergent OR steam clean	NA	NA

* Bleach solution must contain 5.25% Sodium Hypochlorite and have 10-20 minutes surface of contact time. Given the potential for evaporative dilution, bleach solutions should be freshly prepared for use within 24 hours, or the target concentration should be doubled (e.g., 2,000–10,000 ppm) for storage and used within 30 days. EPA-registered disinfectants may also be used although effectiveness in outbreaks has not been evaluated.

Warnings:

1. Cleansing staff should wear protective equipment when handling chemicals.
2. Food preparation /food contact areas must be washed, rinsed, and sanitized using standard protocol after cleansing with the stronger bleach solution listed above.

Additional Recommendations for Healthcare/Assisted Living Facilities:

- Reinforce proper glove use when giving patient/resident care. Remove gloves before leaving the ill patient's/resident's room and wash hands immediately.
- Do not "float" staff between units with ill patients/residents and units with non-ill patients/ residents.
- Assign staff members to care for only the ill group or the only non-ill group to help prevent transmission.
- Exclude non-essential personnel from units with ill patients/residents.
- Discontinue new admissions to the facility until the outbreak has ended.
- Confine ill patients/residents to their rooms until 72 hours after their symptoms end.
- Do not allow patients/residents from outbreak-affected units to enter/transfer to unaffected units, unless it is medically urgent to do so, until the end of the outbreak.
- Discontinue group activities (communal dining, etc.) until the outbreak has ended.
- Limit visitation until the outbreak has ended.
- Store and launder contaminated soiled linens separately from non-contaminated soiled linens.
- Cleaning up areas soiled with vomit or stool: Clean up vomit and stool quickly to prevent the spread of harmful germs.
 - Wipe up the vomit or stool before using disinfectant for effectiveness.
 - It is important to wear disposable gloves during cleaning. If you anticipate the possibility of liquid splashing, wear a disposable mask and cover gown or apron, if one is available.
 - Using a vacuum cleaner to clean up vomit or stool is highly discouraged.
 - Use paper towels to clean the area, then dispose them in a plastic bag. Afterwards, rinse the area with water.
 - For carpeted areas, use absorbent materials such as kitty litter to absorb liquid, and dispose them as instructed above.

Additional Recommendations for Schools/Childcare facilities:

Hand Hygiene

- All employees should wash their hands thoroughly with warm running water and soap, rub for at least 20 seconds and clean under the fingernails. Afterward, they should dry their hands with a single-use paper towel or air dryer.
- Hand hygiene after using the restroom, sneezing, coughing, changing diapers, and before any food preparation or service.
- Hand sanitizer does not work well against norovirus and should not be used as a substitute for hand washing. But you can use hand sanitizer in addition to hand washing.
- Ensuring proper hand washing is absolutely essential for the well-being of all. Strengthen monitoring efforts to enhance hygiene standards.

Toy Cleaning

- Clean and disinfect toys daily.
- Any toy that enters a child's mouth (e.g., rubber or plastic blocks and balls) must be disinfected with 200ppm bleach, rinsed thoroughly, and air dried or run through the dishwasher at a high temperature (170°F).
- Remove any visible debris on softer toys that have been soiled by vomit – (see General Disinfection section).
- Launder toys as directed or discard if needed.

Keeping Diaper Changing Surfaces Clean

- Surfaces should have a plastic covered pad without cracks.
- Use disposable material to cover the pad on changing tables such as shelf paper, wax paper, scrap computer paper, cut up paper bags. Discard after each diaper change.
- Clean the surface after every diaper change by washing with detergent, water and friction, bleach dilution (see General Disinfection section for appropriate concentration) and rinsing with clean water.
- Caregivers must wash their hands immediately after changing a diaper.
- After changing a diaper, the diapered child's hands should be washed as well.

**Facility-specific List of Suggested Items to Sanitize with 1000ppm Bleach Solution
(1/3 cup bleach in 1 gallon water)**

This is a list of suggested items to sanitize in order to reduce the number of illnesses during a gastroenteritis outbreak. This list is not exhaustive, and your facility may have additional items in need of sanitation.

General:

- Doorknobs, water fountains, bathroom stall and sink hardware, paper towel dispenser, soap dispenser, handrails, countertops, light switches, and other common items shared among staff/patrons. Some germs can persist on hard surfaces and be a source of infection. Disinfecting frequently touched surfaces like doorknobs and handrails 3-4 times daily can prevent germs from causing infections.

Restaurants/Food Services:

- Doorknobs, water fountains, bathroom stall and sink hardware, paper towel dispenser, soap dispenser, handrails, countertops, light switches, common telephones, menus, table placards, folders for credit cards, trays, tray stands, baskets, salt & pepper shakers, table bottle of ketchup and other condiments, sugar packet dispensers, booths, tables, exposed parts of buffet line, sneeze guards, and other common items shared among staff/patrons.

Healthcare Facilities:

- Doorknobs, water fountains, bathroom stall and sink hardware, paper towel dispenser, soap dispenser, handrails, countertops, light switches, common telephones, menus, table placards, folders for credit cards, trays, tray stands, baskets, salt & pepper shakers, table bottle of ketchup and other condiments, sugar packet dispensers, booths, tables, exposed parts of buffet line, sneeze guards, and other common items shared among staff/patrons.

Schools/Childcare Facilities:

- Doorknobs, water fountains, bathroom stall and sink hardware, paper towel dispenser, soap dispenser, handrails, countertops, light switches, common telephones, shared games/books/toys, playground equipment, diaper changing table, diaper changing pad, locker hardware, shared classroom equipment (microscopes, musical instruments, computer keyboards), physical education shared equipment, cafeteria tables and chairs, cafeteria salt/pepper shakers, and other common items shared among staff/students.
- Cloth items unable to withstand bleach sanitization (plush toys, pillows, etc.) should be laundered in hot water or discarded if laundering/sanitization not possible.

ADDITIONAL RESOURCES

- [Disinfection and Cleaning](#). (Water Quality and Health Council, 2023).
- [Updated Norovirus Outbreak Management and Disease Prevention guidelines \(2011\)](#)
- [List G: Antimicrobial products registered with EPA for claims against norovirus \(Feline calicivirus\)](#). (EPA 2023)
- [Norovirus Burden and Trends](#). (2023)

REFERENCES

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2. Jiang, X., Wang, M., Wang, K., & Estes, M. K. (1993). Sequence and genomic organization of Norwalk virus. *Virology*, 195(1), 51–61. <https://doi.org/10.1006/viro.1993.1345>
3. Centers for Disease Control and Prevention. (2019). Maintaining a clean living environment and disinfection of surfaces. Retrieved from: <https://www.cdc.gov/disasters/disease/diarrhea-evac.html>

4. Michigan Department of Health (2023). Michigan guidelines for environmental cleaning and disinfection of norovirus. Retrieved from: <https://www.michigan.gov/-/media/Project/Websites/mdhhs/Folder1/Folder96/NorovirusEnvironCleaning.pdf?rev=712cdd5da6784a12b61b7200b5abc847>

**CONTACT THE DC HEALTH DEPARTMENT IF YOU SUSPECT AN OUTBREAK IN YOUR FACILITY at:
Phone: (202) 442-9021/442-8141 (8:15 am-4:45 pm) | 844-493-2652 (after-hours calls) | Fax: (202) 442-8060 | Email: doh.epi@dc.gov**