



Department of Public Health and Human Services

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DPHHS Technical Guidance on Norovirus: Outbreak management and disease prevention guidelines for schools.

This document serves as guidance for disinfection procedures for elementary, middle, and high schools both during and between confirmed and suspected norovirus outbreaks.

Norovirus is the most frequent cause of acute gastrointestinal illness in the United States. Norovirus is very contagious and is spread by contaminated food or water, and after touching contaminated surfaces.

During norovirus outbreaks

- Hand hygiene
 - Encourage frequent handwashing by students and staff with soap and running water for at least 20 seconds
 - Encourage students and staff to use ethanol-based hand sanitizers (60–95%) between proper handwashings and when handwashing is not possible
NOTE: the use of hand sanitizer should be considered an adjunct for and not a replacement of proper handwashing with soap and running water
 - Assure staff use gloves when handling ready-to-eat foods and eating utensils
- Exclusion
 - Recommend any child or staff member with acute gastrointestinal illness stay home and away from school until at least 48 hours after symptoms have resolved
 - Food service employees are prohibited from working while suffering from an acute gastrointestinal illness (Administrative Rules of Montana 37.110.210) and should be encouraged to remain home until at least 72 hours after symptoms have resolved
- Environmental disinfection
 - Sodium hypochlorite (chlorine bleach) products with activity against norovirus should be used to disinfect surfaces (**Table**)
Note: EPA-approved cleaning products can be found at the following website:
http://www.epa.gov/oppad001/list_g_norovirus.pdf
 - Particular attention should be given to areas most likely to have the greatest norovirus contamination such as bathrooms and high-touch surfaces (e.g., door knobs, computer keyboards and mice, light switches, hand rails, etc.)
 - Initial cleaning of contaminated surfaces to remove fecal material or vomitus should be performed **before** chlorine bleach disinfection
 - Areas visibly soiled with fecal material or vomitus should be cleaned using hot water and detergent, or steam cleaned
Note: do not vacuum as norovirus can become airborne
 - Bleach solutions should be prepared for use within 24 hours
 - Do not enter food service area with items soiled with fecal material or vomitus
 - Use a utility sink for washing items soiled with fecal material or vomitus

Table. Recommended cleaning agents for use during norovirus outbreak

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

^aBleach solution must: be prepared fresh daily and have 10–20 minute surface contact time. Use unopened bleach for outbreak-related sanitization (open bottles lose effectiveness after 30 days from opening). EPA-registered disinfectants may also be used although effectiveness in outbreaks has not been evaluated.

Warning: cleaning staff should wear protective equipment when handling chemicals.

Table adapted from http://www.michigan.gov/documents/Guidelines_for_Environmental_Cleaning_125846_7.pdf

Between norovirus outbreaks

Note: these measures can also be used during norovirus outbreaks, but should not replace the above disinfection recommendations

Decreasing environmental contamination from norovirus and reducing student absenteeism from gastrointestinal outbreaks can be achieved through teacher-enforced basic disinfection procedures, including the following:

- Use 0.29% quaternary ammonium chloride wipes to disinfect student desks once daily after lunch
- Instruct students to wash with soap and warm water in the restroom following toilet use
- Instruct students to use alcohol hand sanitizer (60–95%) at the following times:
 - Before and after lunch
 - In the classroom upon returning from the restroom
 - After any contact with potentially infectious secretions (e.g., after exposure to other ill children or shared toys that had been mouthed).

References:

1. Centers for Disease Control and Prevention (CDC). Norovirus. <http://www.cdc.gov/norovirus>.
2. CDC. Updated Norovirus Outbreak Management and Disease Prevention Guidelines. MMWR. 2011;60(No. RR-3):1–15. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6003a1.htm>
3. DSandora TJ, Shih M, Goldmann D. Reducing absenteeism from gastrointestinal and respiratory illness in elementary school students: a randomized, controlled trial of an infection-control intervention. *Pediatrics*. 2008;121:e1555–62.