

Gastrointestinal Virus Infection Control Measures Schools and Daycare Facilities

These guidelines have been developed to help stop the spread of viral gastroenteritis in schools and daycares. Norovirus is highly contagious and very resilient. The virus can survive low chlorine levels, freezing, and heating to 140°F. Preventive measures should be continued for at least 3 days after the outbreak appears over. Infected persons can continue to shed the virus for up to 2 weeks after they have recovered.

Norovirus can be transmitted by multiple methods: foodborne, waterborne, person-to-person, and fomite (inanimate objects). Contamination can occur either by direct contact with soiled hands, environmental surfaces that are contaminated with stool or vomit, or by tiny droplets from vomit that can become airborne. Contaminated food, water, or fomites can serve as vehicles to transmit the virus. The virus cannot multiply outside of the body but can survive for several days. Infected persons shed an extremely large amount of virus in feces and vomitus (> 1 million virus particles/ml). It is estimated that fewer than 100 Norovirus particles can make a person sick. While Norovirus is the most common cause of human gastroenteritis, other viruses such as Astrovirus, Adenovirus, Reovirus and Sapovirus can be controlled by the same infection control practices although the incubation periods, duration of illness, shedding, and severity may differ slightly.

1. Staff and Students

- Exclude ill staff and students/attendees until asymptomatic for at least 24 hours
 - Schools should consider enacting longer exclusion measures once asymptomatic due to prolonged shedding of the virus, ie: 72 hours after the cessation of symptoms
- Housekeeping staff should ensure adequate supplies of soap and paper towels in all restrooms
- Hand hygiene
 - Wash and dry hands with soap and water for at least 20 seconds
 - Students/attendees should be led to the restrooms prior to any food or drink consumption
 - Young students should be reminded about how to wash their hands and for how long
 - Suggest singing the ABC song
 - During outbreaks, *do not* use alcohol sanitizers as a replacement for washing hands; many viruses are not affected by alcohol
- Soiled clothing should be removed and placed in a plastic bag for cleaning at home

2. Contact Prevention

- Discontinue
 - Group activities should be kept to a minimum or postponed, particularly those involving visitors or food
 - Do not allow students to bring in home-cooked food items to be shared with the class
- Signage:
 - Post signs explaining the risk of infection to patrons and visitors
 - Post hand washing signs (ask the ISDH for copies)
- Students/attendees should be sent home with a reminder to parents to not send children with vomiting and/or diarrhea to school/daycare until asymptomatic for at least 24 hours

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3. Personal Protective Equipment (PPE)

- Housekeeping staff should wear PPE when vacuuming, cleaning contaminated or potentially contaminated surfaces, or laundering
 - Minimize aerosolization while cleaning
- PPE: All staff should be adequately trained on how to don and remove PPE appropriately¹
 - Disposable gloves – during ill person contact and environmental disinfection measures
 - Masks and/or face shield - may be necessary for contact with persons while vomiting and during disinfection of surfaces or materials contaminated with vomitus or feces that may become aerosolized
 - Disposable gowns and booties - may be necessary to protect workers during extreme cleaning conditions of vomitus and feces and to avoid contaminating work clothing that could come into direct contact with other surfaces or persons
 - Dispose of all PPE before coming in contact with another area

4. Disinfection and Sanitation

- Use a bleach solution to frequently clean *all* common surfaces, as often as once per hour
 - Use common sodium hypochlorite (bleach)
 - Do not use scented or low-odor bleach
 - Bleach starts losing its effectiveness after being opened for 30 days
 - For surfaces that could corrode or be damaged by bleach, rinse the sanitized area with water or a 70% alcohol solution after applying the bleach solution
 - As bleach degrades over time, the solution should be date and time labeled and prepared at least daily
 - Use a new freshly made bleach solution between each room or area cleaned

Table 1: Bleach dilutions, 1:10 is recommended

	1:10 (5000ppm)	1:50 (1000ppm)	1:250 (200ppm)
Mixing Instructions	1 part bleach to 9 parts water or 1&2/3 cups of bleach to 1 gallon of water	1/3/ cup bleach to 1 gallon of water	1 tablespoon bleach to 1 gallon of water
Surfaces	Use for porous surfaces and direct clean up of soiled areas	Non-porous surfaces, tile floors, counter-tops, sinks, toilets	Can be used for stainless steel, food/mouth contact items, toys
Contact Time	10-20 minutes on surface	10-20 minutes on surface	10-20 minutes on surface

- Use a 10% bleach solution to frequently clean *all* common fomites, at least once a day
 - Fomites are inanimate objects capable of carrying infectious agents from an infected person to another person
 - Examples: desks, table tops, door handles, remote controls, railings, elevator buttons, counter tops, arm rests, toys, athletic equipment, telephones, electronic equipment and buttons, toilet seats, water faucets, water fountains, ice machines, light switches, diaper stations
- Solutions that *are not* effective
 - Commonly used quaternary ammonium disinfectants
 - Non-hospital grade bleach wipes often do not contain bleach at all
 - Phenols (Lysol ® or Pinesol ®) can be effective but require 2-4x more concentration than the manufacturer’s recommendation, posing a significant health risk
 - Quaternary (quats) compounds, ethanol, or anionic compounds
- Visible debris should be cleaned up with disposable absorbent material (double bag and discard)
- Contaminated carpets and upholstery
 - Should be steam cleaned at ≥158°F for 5 minutes or 212°F for 1 minute or cleaned with detergent, hot water (≥170°F), and sodium hypochlorite (if bleach-resistant)
 - Carpets and upholstery must be allowed to air dry (or with assistance from a fan) before the area can be considered useable

- Linens (including clothes, towels, tablecloths, napkins, etc.)
 - Soiled items (with vomit or stool) must be separated from non-soiled items before laundering
 - Launder in 160°F at the maximum cycle length and add bleach during the rinse cycle (if possible)
 - Dry at a temperature $\geq 170^{\circ}\text{F}$

5. Contact Prevention

- Discontinue
 - Group activities, athletic events, or activities involving water should be kept to a minimum or postponed, particularly those involving visitors or food
 - Pools, hot tubs, athletic rooms, and other common areas should be closed during the outbreak
 - Do not allow students to bring in home-cooked food items to be shared with the class
- Signage:
 - Post signs explaining the risk of infection to patrons and visitors
 - Post hand washing signs (ask the ISDH for copies)

Please contact your local health department for assistance as soon as possible if an outbreak is suspected. The ISDH laboratory can provide free stool testing of students and staff during an outbreak.

Indiana State Department of Health
317-233-1325 (24-hours)

For more information about viral gastroenteritis <http://www.in.gov/isdh/25448.htm>

Resources

1. Partnership for Food Safety Education. Fight BAC! Goes to Child Care. <http://www.fightbac.org/campaigns/fight-bac-goes-to-childcare>
2. CDC Vital Signs. Preventing Norovirus Outbreaks. <http://www.cdc.gov/vitalsigns/norovirus/index.html>
3. The Centers for Disease Control and Prevention (CDC). Prevent the Spread of Norovirus. <http://www.cdc.gov/Features/Norovirus/>
4. The Centers for Disease Control and Prevention (CDC). Norovirus. <http://www.cdc.gov/norovirus/index.html>
5. *MMWR*. (March 4 2011). Updated Norovirus Outbreak Management and Disease Prevention Guidelines. 60(RR03); 1-15. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6003a1.htm?s_cid=rr6003a1_w
6. The Centers for Disease Control and Prevention (CDC). Guidance for the Selection and Use of Personal Protective Equipment in Healthcare Settings. <http://www.cdc.gov/HAI/prevent/ppe.html>