Prevention of Norovirus Outbreaks in School and Childcare Settings

Norovirus is a virus that causes acute gastroenteritis in humans. It is sometimes called the "stomach flu" but is not related to influenza (flu) viruses, which primarily cause respiratory infection.

The most common symptoms of norovirus are diarrhea, vomiting, and abdominal pain. Fever, chills, headache, body aches and fatigue may also be present. Symptom onset is usually abrupt, which is very characteristic of norovirus.

Norovirus is very contagious, and is spread through contaminated food or water, by contact with an infected person, or by contamination of environmental surfaces. The virus has an incubation period (time period from when you are exposed to the virus to when you become ill) of 12-48 hours. Infected individuals are symptomatic for 1-2 days. Typically, a person is contagious as soon as they begin feeling sick and remains contagious until a few days after they recover. However, sometimes an ill person can continue to shed norovirus in their feces for two weeks or longer and can remain contagious even after symptoms have ended. Norovirus can spread quickly from person to person in places such as schools and childcare centers.

Outbreak detection and reporting

Childcare centers and schools are required to report all confirmed or suspected outbreaks of acute gastroenteritis, including norovirus to their local health department as soon as possible. An outbreak of norovirus is defined as an occurrence of two or more similar illnesses resulting from a common exposure that is either suspected or laboratory-confirmed to be caused by norovirus.

Information should be gathered to confirm the outbreak – schools should provide as much of the following information as possible:

- Total number of students and staff in the school
- A line list (also known as an illness log) that includes all ill children and staff. Line list templates, School/Childcare Excel and Google Sheets Line Listing can be found on the School Health webpage.
    - Include all food handlers that have been ill, along with their specific duties. A food handler is any person directly preparing or handling food. Food handlers may range from staff providing snacks in a childcare setting to cafeteria staff in a school.

- Extracurricular activities and special events held during the 2 weeks prior to the first illness onset. Examples of extracurricular activities or events might include sports, social events or clubs and may be indicated under comments on the line list.

It is prudent to contact the local health department with any unusual cluster of gastrointestinal illness. A directory of local health departments can be found at the following website (www.localhealth.nj.gov). If there is difficulty reaching your local health department, please contact the New Jersey Department of Health (NJDOH) at 609-826-5964 (after hours emergency line 609-392-2020).

Control Measures

Exclusion

- Children and staff who are experiencing symptoms of norovirus should stay home from school or daycare until **24-48 hours** [1]after symptoms are resolved (e.g., 24-hour exclusion, last episode Monday at noon, child may return on Wednesday).
- Staff involved in food preparation should be restricted from preparing food for **48-72 hours**[1] after symptoms have resolved. The staff may perform other duties not associated with food preparation 24 hours after symptoms have stopped.
- Ill persons should be excluded from swimming until at least **48 hours** after their symptoms have ended.

Hand Hygiene

- Hands should be washed with warm water and soap for at least 20 seconds.
- Hand sanitizer alone does not work well against norovirus.
- Children should be taught good hygiene practices and should wash their hands after using the bathroom (or diaper change), before eating, and after coughing or sneezing.
- Staff, especially those caring for diapered children, should wash their hands after using the restroom, changing diapers, sneezing or coughing, cleaning up vomit or diarrhea, handling soiled items, or helping students in the restroom. They should also wash hands before eating, preparing or serving food, or feeding children.

Cohorting

- To limit the spread of infection, try to keep all staff who worked with sick students, in the same classroom or area if possible. For example, if there is an outbreak in the toddler room, keep the same staff working in the toddler room until the outbreak is over, rather than allowing them to work in another room or area.
- Ill students should be held in an isolated area until they are picked up. Sick persons should not be sitting in common areas such as hallways.
- In settings such as boarding schools or college dormitories, sick students should use separate toilets and be housed separately from well students if possible.

[1] Exclusion time may be on a case-by-case basis after consultation with the local health department.

Cleaning and Disinfection

Routine cleaning and disinfection are important prevention measures against the spread of germs. Schools should follow their standard procedure for routine cleaning and disinfecting. Typically, this means daily sanitizing of surfaces and objects that are touched often, such as desks, countertops, doorknobs, computer keyboards, hands-on learning items, faucet handles, phones, and toys. For more information, see When and How to Clean and Disinfect a Facility | CDC.

While the following information applies to all school settings, the Centers for Disease Control and Prevention (CDC) and NJDOH have additional resources targeted specifically for the childcare setting and are noted below. In addition to following specific environmental requirements outlined in N.J.A.C. 3A:52 (Manual of Requirements for Childcare Centers) more information on cleaning and disinfection in childcare centers can be found at How to Clean and Disinfect Early Care and Educations Settings and NJDOH Toolkit for Keeping Your Child Care Center Healthy.

NJDOH also has guidance on keeping a healthy indoor environment in schools:

- What's the Difference Between Cleaners, Sanitizers, and Disinfectants?
- Safe Cleaning -- What's Wrong with Using Bleach?
- Safe Cleaning with Microfiber Cloths and Mops
- Air Fresheners -- What You Need to Know

Cleaning with all-purpose cleaners (certified green cleaners/soap/detergent) and water decreases the number of harmful germs (like viruses, bacteria, parasites, or fungi) on surfaces and reduces risk of infection from surfaces in schools. Cleaning also helps remove mold and allergens that can trigger asthma symptoms. Schools should routinely clean high-touch surfaces such as door handles, stair rails, elevator buttons, touchpads, restroom fixtures, desks, counters, and tables.

Sanitizing reduces the number of germs on non-porous surfaces. Sanitizing is done with weaker bleach solutions than are used for disinfection or sanitizing sprays. Sanitizer labels should specify the surfaces they are intended to be used on. Sanitizers must be registered and are regulated by the U.S. Environmental Protection Agency (EPA). Surfaces or items should be cleaned before they are sanitized. Surfaces that come in contact with children's mouths, such as infant feeding items and toys should be sanitized.

Disinfecting kills most germs including bacteria and many viruses on non-porous surfaces. Disinfectants are pesticides regulated and registered by the EPA. By killing germs on a surface after cleaning, disinfecting can further lower the risk of spreading disease. Schools should refer to the EPA website to use an EPA-registered disinfecting product that are effective against common pathogens.

If making a bleach solution for general disinfection, household bleach (5.25%–6.15% sodium hypochlorite) should be used. Using alternative preparations (e.g., non-scented or splash-less bleach) of bleach may alter the dilution concentration needed to clean materials. Bleach should not be combined with any other disinfectants or cleaning products. Household bleach (or any disinfectants) should **never** be mixed with any other cleaners or disinfectants. Follow the label directions on the bleach product and determine if any protective equipment, such as gloves or eye protection should be worn.

Surface/Item	Concentration	Amount of Water	Amount of Bleach
Stainless steel, food/mouth contact items, toys	1:250	1 gallon	1 tablespoon
Non-porous surfaces, tile floors, countertops, sinks, toilets	1:50	1 gallon	1/3 cup
Porous surfaces, wooden floors	1:10	1 gallon	1 and 2/3 cup
Fecal and or vomit accidents	1:10	1 gallon	1 and 2/3 cup

When using bleach as the disinfectant of choice, there are a few things to keep in mind:

- Once opened, bottles of household bleach will lose effectiveness after 30 days.
- Use a new unopened bottle of bleach every 30 days for preparing diluted disinfectant.
- Prepare a fresh dilution of bleach (only from bleach bottles that have not been open for more than 30 days) with room temperature water every day of use and discard unused portions.
- Bleach can be dangerous to use. It must not be mixed with any other chemicals, especially the quaternary ammonium compounds due to the hazardous gas that can form.
- When using bleach, try to use pump bottles or pour bottles rather than spraying bottles so the chlorine does not become aerosolized and inhaled by employees. Spray bottles can also disturb or "stir up" virus particles back into the air.

Guidance for Clean-up of Vomit or Feces

Ideally, schools should maintain separate supplies (such as buckets) for cleaning these types of accidents, and refrain from using supplies that are used for routine cleaning.

Disposable masks, aprons/gown, shoe covers, and eye shields should be worn if they are available. At a minimum, the person cleaning should wear disposable single-use gloves and a mask.

The following procedure should be used to clean vomit or feces.

- Cordon off a 10-foot range in the area where the incident occurred until it is cleaned. If the incident occurred in the kitchen, cordon off a 25-foot range.
- Clean areas soiled with vomit or feces promptly after the incident occurs.
    - Vomit and diarrhea should be removed carefully to minimize airborne particles. Using disposable absorbent material (e.g., cloth, paper towels, kitty litter, baking soda) soak up vomit and diarrhea. Do not vacuum material; using gloves, pick it up using paper towels. Dispose of all waste in a plastic trash bag or biohazard bag, immediately close, and dispose of the bag.
    - Then, use soap and water to wash and rinse the area or object. Wipe dry with paper towels. Dispose of all waste in a plastic trash bag or biohazard bag, immediately close, and dispose of the bag.
- After the area or object has been cleaned, it must be disinfected. Liberally disinfect area and objects surrounding the contamination with an appropriate disinfectant (multiple applications may be required).
    - Ensure that the appropriate dilution and contact times for the disinfectant are used.
    - Begin by spraying the soiled area with a freshly prepared 10% household bleach solution. This solution can be made by mixing 1 and 2/3 cup (about 13 ounces) of bleach per gallon of water. This is stronger than the concentration used for routine disinfection. An EPA registered product effective against norovirus according to manufacturer's instructions may also be used.
    - Spray the entire area within a 10-foot range of the vomiting or fecal accident. If the incident occurs in the kitchen, consider the area within 25 feet of the vomit to be contaminated.
- After the affected area has been cleaned, supplies used to clean the incident (such as buckets) should be sprayed with a 10% household bleach solution and allowed to air-dry.
    - Place the gloves, apron, mask, cleaning cloths, shoe covers and paper towels in the trash bag and dispose of the bag in a trash receptacle.
    - The person cleaning the affected area should thoroughly wash their hands when finished.
- If the incident occurs outdoors or in an area that is not easily cleaned, attempt to remove as much vomit or feces as possible by the method described above. When outdoors, the affected area can be covered with soil or ground cover after removing as much vomit or feces as possible.
- If a person vomits or has a fecal accident in the dining hall/cafeteria, clean the affected area as indicated above. Food contact surfaces and dining tables near the accident should be sprayed with a 10% household bleach solution and then rinsed with clean water. Food that was in the area when the accident occurred should be thrown away.
- If applicable, students should be instructed to handle linens and clothing soiled with vomit or feces as little as possible. These items should be laundered with detergent in hot water at the maximum cycle length and then machine dried on the highest heat setting. If there are no laundry facilities onsite capable of reaching a suitable

temperature, soiled items should be double bagged (using plastic bags) and taken offsite for proper washing and drying. If soiled items are sent home, instruct parents or caregivers of the proper washing and drying procedures.

Cleaning and Disinfection of Surfaces and Items

- **Hard Surfaces:** For toilets, sinks, furniture, walls, floors and other hard, non-porous surfaces, carefully remove vomit and diarrhea, and clean contaminated objects and surfaces with soap and hot water. Then, disinfect with the bleach solution.

- **Diaper Changing Surfaces and Potty Chairs**: For diaper changing stations and potty chairs, clean with soap and hot water, and disinfect using the bleach solution after each use (including equipment or supplies that were touched). Rinse thoroughly with clean water afterwards.

- **Food/Mouth Contact Items**: For objects that may come in contact with food or the mouths of people (such as toys or dishes), carefully remove vomit and diarrhea. Then, disinfect with the bleach solution. Rinse thoroughly with clean water afterwards. Alternatively, dishes, utensils, and cups can be cleaned with a dishwasher (using hot water and dishwasher detergent) immediately after use.

- **Carpets/upholstery**: For carpets, upholstery, and other porous surfaces, carefully remove vomit and diarrhea, and clean with soap and hot water. Then, steam clean at a temperature of 158° F for five minutes or 212° F for one minute. To minimize aerosolization of particles, do not vacuum.

- **Cloth and Plush Items:** If soiled, vomit or feces should be carefully removed to minimize aerosols. Keep contaminated and non-contaminated clothes separated. Minimize disturbance of soiled linens and laundry. Aerosols may pose a risk for transmission. Wash items in a pre-wash cycle, then use a regular wash cycle using detergent. Dry items separately from uncontaminated clothing at high temperature greater than 170°F. Ensure separation of clean and soiled linens/clothing/textiles.

- **Objects Not Easily Cleaned:** Items that are difficult to clean, like puzzle pieces, chalk, crayons and clay, should be discarded.

Food Service

Norovirus is often spread through contaminated food or water. Facilities serving or sharing food should take these extra precautions:

- Exclude ill food handling staff from work until at least 48 hours after symptoms have ended.

- Require food handling staff to wear personal protective equipment (such as disposable gloves) while handling, serving, or preparing food.
- Ensure that clean water, soap, and paper towels are available in dining areas, and other areas where eating may occur.
- Restrict sharing of foods brought from private homes.
- Restrict students' sharing of any communal food items in classrooms. Instead, the teacher should hand out items to be shared after washing his/her hands.
- Stop using self-service food bars. Do not let children serve themselves in any manner which might promote direct hand contact with shared foods.
- Limit the use of shared dining items, such as serving utensils, water pitchers, salt and pepper shakers, and cups.

Resources

NJDOH:

- School Health
- Norovirus
- Handwashing Materials

CDC: Norovirus

EPA: Selected EPA-Registered Disinfectants

Washington Integrated food Safety Center of Excellence: Norovirus Toolkit for School or Childcare Center Outbreaks

National Education Association Healthy Futures: The Stomach Bug Book

NJHealth
New Jersey Department of Health
Communicable Disease Service

Checklist for Schools: Responding to a Norovirus Outbreak

An outbreak of norovirus is defined as an occurrence of two or more similar illnesses resulting from a common exposure that is either suspected or laboratory-confirmed to be caused by norovirus. You may be experiencing clusters of ill students and/or staff that are in the same classroom, same grade or wing of the facility or have attended a common event. The information in this checklist is outlined in detail in the NJDOH "Prevention of Norovirus Outbreaks in School and Childcare Settings".

If a norovirus outbreak is suspected, affected facilities should immediately institute control measures to help prevent the spread of illness. To ensure a comprehensive outbreak response, the following steps are recommended:

- ☐ **Notify the Local Health Department:** Immediately report the outbreak or suspect outbreak to the local health department where the school is located.
- ☐ **Assign School Staff Roles and Responsibilities:** Designate facility staff to handle duties related to outbreak management.
    - Tracking illnesses.
    - Coordinating communications.
    - Obtaining appropriate cleaning supplies.
    - Cleaning and disinfecting contaminated areas.
    - Overseeing meals and group activities for good dining and hygiene practices.
- ☐ **Collect Information:** Gather information regarding the number ill, total number in the school, symptoms, and lab testing performed if any.
- ☐ **Track Ill Persons:** Track student and staff illnesses. A line list template can be found on the NJDOH website. Monitor for kitchen staff illnesses during the outbreak.
- ☐ **Educate Staff, Students, and Parents:** Inform staff, students, and parents or guardians about the outbreak, symptoms of norovirus, and prevention measures to use at home and school (i.e., frequent handwashing and staying home when ill), during and after the outbreak is over to reduce transmission.
- ☐ **Implement Facility-Wide Control Measures Recommended by the LHD:**
    - Exclude sick students and staff until at least 24-48 hours (48-72 hours for staff handling food) after vomiting and diarrhea have ended.
    - Maintain environmental cleaning with appropriate products as recommended. "Be sure the products being used, and the surfaces being cleaned match the organism you think may be making people sick." Clean

- and disinfect frequently touched surfaces and all possibly contaminated areas at least once daily. If possible, increase cleaning to at least twice a day.
- Enforce strict handwashing policies for all students and staff (have staff supervise the handwashing of younger students).
- Restrict sharing of communal food/snack items in classrooms, cafeteria (e.g., food sharing table), and staff rooms.

☐ **Consider cancelling or postponing group activities.** Consult with the local health department if you plan to have an event at your facility.

☐ **Consider Limiting Visitors from Accessing Affected Areas of Facility:** If possible, limit visitor access, especially to areas that may be contaminated (for example, encourage parents or guardians to pick children up at the front of the facility rather than coming inside).

☐ **Update LHD: Provide the LHD with updates regularly throughout the outbreak.**

☐ **Determine When the Outbreak is Over:** In general, an outbreak may be over if no new illnesses have occurred after two incubation periods (4 days, since the average incubation period for norovirus infection is 2 days). However, it is important to work with the local health department to determine when the outbreak is over.

- If notification of the outbreak was sent to parents be sure to notify them when the outbreak is over reminding them of the importance of prevention measures such as handwashing and keeping student and staff at home when sick.