

JUST-IN-TIME TRAINING

FOR NOROVIRUS OUTBREAKS



Just in Time Training Tools are intended to be used in a buddy system of training. One partner must be trained in PPE and decontamination. Then, they can quickly train another person “Just in Time” to assist in an event.

The Center for
BIOPREPAREDNESS
Education
A Joint Endeavor between
Creighton University Medical Center and University of Nebraska Medical Center

NOROVIRUS

Noroviruses (genus *Norovirus*, family *Caliciviridae*) are a group of related, single-stranded RNA, non-enveloped viruses that cause acute gastroenteritis in humans. Norovirus was recently approved as the official genus name for the group of viruses provisionally described as "Norwalk-like viruses" (NLV). Currently, human noroviruses belong to one of three norovirus genogroups (GI, GII, or GIV), each of which is further divided into >25 genetic clusters.

Clinical manifestations

The average incubation period for norovirus-associated gastroenteritis is **12 to 48 hours**, with a median of approximately 33 hours. Illness is characterized by acute-onset vomiting; watery, non-bloody diarrhea with abdominal cramps, and nausea. In addition, myalgia, malaise, and headache are commonly reported. Low-grade fever is present in about half of cases. This vomiting and diarrhea is usually described as "projectile" and "urgent". This may help to differentiate norovirus and other disease. Dehydration is the most common complication and may require intravenous replacement fluids. Symptoms usually last 24 to 60 hours. Volunteer studies suggest that up to 30% of infections may be asymptomatic. This illness is **extremely** contagious. It can take as little as 10-100 virus particles to produce disease compared to >100,000 bacteria for a urinary tract infection.

Isolation precautions

Patients with suspected norovirus infection should be managed with Standard Precautions with careful attention to hand hygiene practices. However, Contact Precautions should be used when caring for diapered or incontinent persons, during outbreaks in a facility, and when there is the possibility of splashes that might lead to contamination of clothing. Persons cleaning areas heavily contaminated with vomitus or feces should wear **surgical masks, shoe covers, jump suits (tyvek), and nitrile or neoprene gloves**. In an outbreak setting, it may be prudent to place patients with suspected norovirus in private rooms or to cohort such patients.

With evidence of increasing transmission, it is strongly recommended to follow Contact and Droplet Precautions. (spray of the virus with projectile vomiting is 50 feet in diameter)

Return to work

Many local and state health departments require that food handlers and preparers with gastroenteritis *not* work until **2 or 3 days after they feel better**. This recommendation should be considered for all staff depending on the magnitude of the situation. In addition, because the virus continues to be present in the stool for as long as 2 to 3 weeks after the person feels better, **strict hand washing after using the bathroom and before handling food items is important in preventing the spread of this virus**.



Environmental disinfection

CDC recommends either chlorine bleach or U.S. Environmental Protection Agency (EPA) approved disinfectants for use in controlling norovirus outbreaks. All disinfectants should be used on clean surfaces for maximum performance. Please see the U.S. Environmental Protection Agency (EPA) website for a list of hospital disinfectants registered by the EPA with specific claims for activity against noroviruses. It should be noted that evidence for efficacy of disinfectants against norovirus are usually based on data of efficacy against feline calicivirus (FCV) as a surrogate for norovirus. However, feline calicivirus (a virus of the respiratory system in cats) has different physio-chemical properties to norovirus and there is debate on how well data on inactivation of FCV reflects efficacy against norovirus.

Chlorine bleach should be applied to hard, non-porous, environmental surfaces at a minimum concentration of 1000 ppm (generally a dilution 1 part household bleach solution to 50 parts water) This concentration has been demonstrated in the laboratory to be effective against surrogate viruses with properties similar to those of norovirus. Healthcare facility staff should use appropriate PPE (e.g. gloves and goggles) when working with bleach. In areas with high levels of soiling and resistant surfaces, up to 5000 ppm chlorine bleach may be used.

EPA-approved disinfectants should be used according to manufacturers' instructions.

Quaternary ammonium compounds are often used for sanitizing food preparation surfaces or disinfecting large surfaces (e.g., countertops and floors). However, because noroviruses are non-enveloped virus particles, most quaternary ammonium compounds (which act by disrupting viral envelopes) do not have significant activity against them.

Phenolic-based disinfectants have been shown to be active against noroviruses in the laboratory. However, this activity may require concentrations 2- to 4-fold higher than manufacturer recommendations for routine use.

Heat disinfection (i.e., pasteurization to 60°C (140°F)) has been suggested, and used successfully under laboratory conditions, for items that cannot be subjected to chemical disinfectants such as chlorine bleach.

Interim Recommendations for Responding to a Public Vomiting Incident

General Recommendations:

- Always use wet, versus dry cleaning methods to minimize the airborne spread of contaminated particles. **Evidence suggests that dry vacuum cleaners (including HEPA Filter units) and wet/dry vacuums may lead to further surface contamination via the spread of airborne particles.**
- Use **single use cleaning equipment** and supplies whenever possible and dispose of properly.
- Clean and disinfect any equipment which is not discarded.
- Following a vomiting incident in kitchens, buffet and drink service areas, **discard all exposed/unwrapped ready-to-eat foods within a 25-foot radius of the incident location.**
- If the vomiting incident occurs on a bus or van, consider removing it from service until it can be appropriately cleaned and sanitized



Suggested disposable Personal Protective Equipment (PPE):

- Tyvek overalls
- Boot covers
- Gloves (not vinyl)
 - Mask
- Eye protection
- Hair covering (optional)

Procedure

- 1. Ensure area is isolated or cordoned off as soon as possible after the incident is discovered. Environmental studies indicate that viral particles can be disseminated as far as 25 feet from the site of the vomiting incident.**
2. Put on Personal Protective Equipment.
3. Cover vomit with absorbent towels.
4. Spray area with chemical known to be effective against norovirus (use caution with bleach; chlorine will bleach-out many soft furnishings, carpet, etc) and leave residuals for at least 10 minutes to ensure adequate contact time with the chemicals.
5. Remove the towels and residuals using a dustpan and spatula.
6. Dispose of all materials including dustpan, spatula and PPE in biohazard bag.
7. Spray the area with chemical and let sit for at least 10 minutes.
8. Let the area air-dry.
9. Steam clean (high temperature extraction unit) contaminated carpets immediately following the manual cleaning steps outlined above.
10. Clean and sanitize any cleanup equipment which is not disposed of.



Other Recommendations to be considered:

1. Environmental Cleaning

- Consider using dedicated Environmental Services staff for clean-up of all accidents and have them wear full protective attire (hair cover, feet cover, surgical scrub suits, surgical mask, and gloves).
- On outbreak units, disinfect surfaces such as telephones, bathrooms, common work surfaces, door knobs 3 times per day.
- Go through the whole hospital environment and disinfect all commonly touched surfaces. This also includes steam cleaning with calcivirus-killing agent all carpets.
- Immediately shut down any area when a vomiting or diarrhea accident has occurred. Establish a hotline to identify these areas.
- It may be beneficial to have pre-prepared kits for Environmental Services staff to talk with them as they are dispatched to clean after accidents.
- **DO NOT USE SOLIDIFIER** on vomit as it may cause additional aerosolization and transmission of the virus.
- Control entrance to bathroom/area contaminated by a vomiting or diarrhea accident



2. Food Service



- Discontinue all self-served foods in cafeterias and dining areas.
- Consider using paper serving products during the outbreak to avoid accidental touching of utensils.

3. Laboratory specimens

- Stool cultures should be submitted to an appropriate lab for testing.
- The specimen should be kept cold.
- For questions on where Norovirus testing specimens should be sent, contact:

Nebraska Public Health Laboratory
(402) 559-2440
1-866-290-1406

