

# SUMMARY OF GUIDELINES FOR INVESTIGATION AND MANAGEMENT OF NOROVIRUS OUTBREAKS IN HEALTHCARE AND RESIDENTIAL FACILITIES

Colorado Department of Public Health and Environment  
Communicable Disease Branch

**Agent:** Noroviruses cause acute viral gastroenteritis. In healthcare and residential facilities (HCRFs), outbreaks of gastroenteritis caused by noroviruses are fairly common (especially in winter), and require immediate attention to prevent prolonged spread of the virus in residents and staff.

**Incubation period:** 12 - 48 hours

**Duration of symptoms:** 12 - 60 hours

**Symptoms:** Onset of symptoms is sudden, consisting of nausea, vomiting, diarrhea (not bloody), abdominal cramps, low-grade fever, headache, chills, muscle aches and malaise. Severe dehydration can be fatal, especially among older persons with debilitating health conditions.

**Transmission/Communicability:** Noroviruses are extremely infectious, and are highly concentrated in the stool and/or vomit of infected people. Transmission is primarily person-to-person via the fecal-oral route, although airborne and fomite transmission may occur during outbreaks. Noroviruses can also cause foodborne and waterborne outbreaks. People are most contagious from the moment they begin feeling ill until diarrhea subsides, however they can remain contagious until at least 48 hours after recovery.

**Treatment:** There is no antiviral medication for treatment nor is there a vaccine for prevention. Supportive therapy consists of replacing fluids and electrolytes to prevent dehydration.

**Investigation:** In the event of an outbreak, the following steps should be taken:

- **Notify CDPHE or the local public health agency within 24 hours (phone numbers below).** CDPHE is available to assist HCRFs and local public health agencies investigate these outbreaks and review appropriate control measures.
- Collect 2-6 stool specimens from different ill individuals and submit them to a commercial laboratory or to CDPHE for norovirus testing and bacterial culture (on a fee for service basis). Try to collect specimens during the first 48 hours of illness while stool is still liquid.
- **Outbreak control measures should not be delayed while waiting for test results.**
- At the minimum, the facility should collect and document the following information for each ill resident and staff member:
  - Illness onset date and time
  - Duration of illness
  - Wing/room number (residents)
  - Symptoms
  - Hospitalizations/deaths
  - Job duties, work location, dates worked (staff)
- Based on the data collected above, the local public health agency and/or CDPHE will determine if the outbreak is likely from a common source or due to person-to-person spread. Additional information will be collected as needed to determine the source of the outbreak.

## **Additional Information:**

**Communicable Disease Branch**

**(303) 692-2700**

**After-Hours Number**

**(303) 370-9395**

**Laboratory Services Division (state laboratory)**

**(303) 692-3090**

For additional information on norovirus, please visit these CDC websites:

- Updated Norovirus Outbreak Management and Disease Prevention Guidelines: [www.cdc.gov/mmwr/pdf/rr/rr6003.pdf](http://www.cdc.gov/mmwr/pdf/rr/rr6003.pdf)
- Information on norovirus, including frequently asked questions: [www.cdc.gov/norovirus](http://www.cdc.gov/norovirus)
- Guidelines for the Prevention and Control of Norovirus Gastroenteritis Outbreak in Healthcare Settings, 2011: [www.cdc.gov/hicpac/norovirus/002\\_norovirus-toc.html](http://www.cdc.gov/hicpac/norovirus/002_norovirus-toc.html)

## Norovirus Outbreak Control Measures:

**Implement control measures as soon as the potential outbreak is recognized.** Do not wait for laboratory results. Since noroviruses may be shed in the stool for weeks after symptoms subside, enhanced precautions need to be in place for at least two weeks following the last case of illness. Some can be discontinued when the outbreak is ‘over’ (at least 2 incubation periods have elapsed since the onset of the last case). The following control measures should be implemented:

### Handwashing:

- Staff, residents, volunteers and visitors must be more conscientious about handwashing and infection control. In general, handwashing should occur more frequently among all people in the facility.
- Hand sanitizing gels and lotions (also known as waterless hand sanitizers) can be used if handwashing facilities are not easily or immediately accessible. They can also be used in addition to proper handwashing. These products are not a substitute for proper handwashing.

### Staff:

- Symptomatic staff members should be reported to the person in charge of infection control or employee health. The following data should be systematically recorded (i.e. on a line list – see page 16): name, sex, age, illness onset date and time, symptoms, job title and location, illness duration, and if a stool specimen was collected.
- **Exclude ill staff, especially food handlers, from work until at least 48 hours after diarrhea and vomiting have ceased, even if they are feeling well sooner.**
- **Instruct ill staff employed at other healthcare or residential facilities not to work at those other sites until at least 48 hours after diarrhea and vomiting have ceased.**
- Nursing staff should not “float” between affected areas and non-affected areas.
- Staff who have been ill during an outbreak of suspected norovirus and who have been symptom free for at least 48 hours may be best suited to care for symptomatic patients until the outbreak is over.
- Non-essential staff should be excluded from the affected areas.
- Staff should use disposable single-use gloves and gowns when caring for ill residents. **Change gloves and gowns and wash hands before caring for each resident.**
- Schedule a meeting with staff to review infection control procedures.
- Actively ask staff, especially kitchen workers, about gastrointestinal symptoms at the start of each shift.
- Staff should wear appropriate PPE (gowns, gloves, and surgical masks) when cleaning areas contaminated with feces or vomit, or when caring for residents who are vomiting.
- Staff such as physical and occupational therapists who are essential and might visit several facilities in one day should be counseled about the outbreak and infection control. Within the affected facility, these staff should visit unaffected units before affected ones and should maintain excellent hand hygiene, especially when moving between facilities.

### Residents:

- Symptomatic residents should be reported to the person in charge of infection control, and the following data should be systematically recorded (i.e. on a line list – see page 18):

- name, sex, age, illness onset date and time, symptoms, room number, unit/wing, hospitalization status, illness duration, and if a stool specimen was collected.
- Ill residents should be placed on contact precautions and should be restricted to their rooms as much as possible until at least 48 hours after cessation of vomiting and diarrhea.
  - If possible, place ill residents in a single occupancy room. Do not place another person with the ill person's former roommate for at least 48 hours (one incubation period).
  - In some settings such as acute care facilities, consider longer periods of contact isolation for ill persons with complex medical conditions (e.g. those with cardiovascular, autoimmune, immunosuppressive, or renal disorders), as these patients can experience protracted illness and prolonged viral shedding.
  - Group activities should not occur among affected residents/units until the outbreak is over.
  - Staff should make an effort to decrease feelings of isolation among ill residents. Consider encouraging family members to make more frequent telephone calls to ill residents.
  - Residents should not be moved from an affected area to an unaffected area.
  - Maintain the same staff-to-resident assignments.
  - Consider the use of antiemetics (anti-vomiting medication) for residents with vomiting.
  - If a resident is transferred to the hospital, notify the hospital that the resident is coming from a facility at which an outbreak of viral gastroenteritis is occurring.

#### Facility

- The facility, in conjunction with the state or local public health agency, should consider halting new admissions until the outbreak is over.
- Use a bleach solution effective against norovirus (5000 ppm; one cup of household bleach in one gallon of water; there are 16 cups in a gallon) or an EPA-approved disinfectant with specific activity against norovirus. **Quaternary ammonium compounds are not effective against noroviruses.** A list of EPA-registered disinfectants is available at: [http://www2.epa.gov/sites/production/files/2015-10/documents/list\\_g\\_norovirus.pdf](http://www2.epa.gov/sites/production/files/2015-10/documents/list_g_norovirus.pdf)
- "Bleach wipes" are increasingly popular in health care facilities, however the concentration of bleach varies widely between brands and varieties. Before using these for disinfection during a norovirus outbreak it is very important to verify the actual concentration of bleach, or verify the product is on the EPA list cited above.
- Clean and disinfect more frequently than usual, especially bathrooms, bathtubs, toilets, and areas of the facility commonly touched, such as handrails and doorknobs. Move from areas with a lower likelihood of norovirus contamination to areas with potentially higher likelihood of contamination.
- Clean and disinfect any area that becomes soiled with feces or vomit promptly with a bleach solution effective against norovirus or EPA-approved disinfectant. The 'Vomit and Fecal Accident Cleanup Guide' on pp. 15-16 might be useful.
- Change mop heads when a new bucket of cleaning solution is prepared, or after cleaning large spills of vomit or fecal material.
- Common medical equipment (such as blood pressure cuffs) should be adequately cleaned and disinfected between residents. Consider dedicating pieces of commonly used equipment (blood pressure cuffs, glucometers, etc.) for use in affected areas.
- Change privacy curtains when they are visibly soiled and at patient discharge or transfer.
- Flush any vomit or feces in toilets immediately.
- For carpets and upholstered furniture, remove visible debris with absorbent material and steam clean (158F for 5 minutes or 212F for 1 minute).

- Handle soiled linens and clothing as little as possible. They should be laundered with detergent in hot water at the maximum available cycle length and then machine dried.
- Any food handled by an ill person should be properly discarded.
- Discontinue self-service or family-style dining in dining rooms until outbreak is over.
- Discontinue ‘hydration stations’ or any other self-service or communal food/beverages for patients or staff until the outbreak is over.
- Disposable dishes and utensils are not necessary as regular dishwashing practices effectively remove any pathogens.
- Post signs that the facility is experiencing an increase in gastrointestinal illness.

Visitors/Volunteers:

- Encourage all visitors and volunteers to wash their hands while in the facility.
- Postpone visits from elderly persons, young children and persons with underlying medical conditions until the outbreak is over.
- Ill family members and friends should be asked to avoid visitation until symptoms subside.
- Monitor facility volunteers for illness. If ill, exclude them from volunteer work until at least 48 hours after recovery.

**Additional Information:**

To report an outbreak or for further guidance, please contact your local public health agency or CDPHE:

<b>Communicable Disease Branch</b>	<b>(303) 692-2700</b>
<b>After-Hours Number</b>	<b>(303) 370-9395</b>
<b>Laboratory Services Division (state laboratory)</b>	<b>(303) 692-3090</b>

## Vomit and Fecal Accident Clean Up Guide

This guide is intended to help settings/facilities where a vomit or fecal accident could potentially contaminate surfaces that many people could come in contact with (such as a school, child care center, hotel, casino, restaurant, etc.). Often times, norovirus or other viral agents are responsible for such illness events; however, this guide can be used for dealing with other types of gastrointestinal illness as well.

Norovirus is highly contagious and causes symptoms of diarrhea, vomiting, low-grade fever, and muscle aches lasting one to two days. Ill persons shed the virus in their stool and vomit. Persons coming in contact with surfaces contaminated by virus-containing stool or vomit can be exposed to the virus. Persons can also become infected if they ingest food or beverages contaminated with the virus. **Contact your local public health department if you believe your facility may be experiencing an outbreak of gastrointestinal illness.**

The following steps can help reduce the potential for an outbreak in your facility and our community while protecting your employees involved in the cleanup. Bleach is the most effective disinfectant for norovirus but may damage textiles and other vulnerable surfaces. Quaternary ammonia solutions typically are NOT effective at destroying norovirus. A list of other disinfectants effective against norovirus can be found at the following EPA website:

[http://www2.epa.gov/sites/production/files/2015-10/documents/list\\_g\\_norovirus.pdf](http://www2.epa.gov/sites/production/files/2015-10/documents/list_g_norovirus.pdf)

Bleach Disinfection Method for Cleaning of Vomit and Fecal Accidents (for surfaces that can tolerate a high concentration of bleach):

- ❖ Get a 2½ to 5 gallon bucket with a lid.
- ❖ The person cleaning up the area should use disposable gloves, mask, and gown or coverall to avoid direct contact with fecal material or vomit, and any potentially contaminated surface. Safety glasses can be worn as well.
- ❖ Mix a disinfectant solution of one cup household, non-scented bleach with 1 gallon water (this will be a 5000 ppm bleach solution). This is a concentrated solution so handle with care.
- ❖ Obtain a spray bottle for applying the disinfectant.
- ❖ Obtain disposable paper towels or disposable rags for the cleanup.
- ❖ Spray disinfectant solution directly onto the contaminants (vomit or feces), cover with the disposable towels/rags and allow the disinfectant to contact the materials for 10 minutes.
- ❖ Carefully pick up the contaminants with the towels/rags. Place all soiled towels/rags in a trash bag.
- ❖ Use the disinfectant solution again to spray the affected surface and wipe down with clean towels/rags. Place all soiled towels/rags in a trash bag.
- ❖ Apply disinfectant to the cleaned surface again and let stand for 1 more minute while air drying.
- ❖ Carefully remove the disposable gloves, mask, and gown or coverall and place in the trash bag. If safety glasses are worn, they should be disposed as well, or sprayed with the bleach solution effective against norovirus and allowed to air dry.
- ❖ Place the trash bag containing the soiled towels/rags and gloves, mask, and gown within another trash bag. Make sure the bags go directly to the dumpster.
- ❖ Any commonly touched surfaces (like door knobs, hand rails, elevator buttons, faucet handles, etc.) in the vicinity (within a 25 foot radius) of where the vomit or fecal accident occurred should be wiped down with the bleach solution effective against norovirus.
- ❖ Be sure to wash hands after cleanup with soap and hot water, rubbing hand together for at least 20 seconds. An alcohol-based hand sanitizer can be applied after handwashing (but hand sanitizers should NOT take the place of proper handwashing with soap and hot water).
- ❖ Open the room to outside air at least until the odor of the disinfectant has gone away.

Contaminated linens (sheets, blankets, towels, etc.) can be washed in hot water with detergent and bleach (if bleach will not damage the material) and dried in a hot dryer. Soiled carpets and upholstery are very difficult to fully disinfect and may it may not be feasible to use the bleach solution if damage to the material will occur. Consider using a different disinfectant that is effective against norovirus that will not damage the material (see the EPA website mentioned above). Steam cleaning these types of surfaces after cleaning up the vomit or fecal material can be helpful. Air dry rugs and furniture in the sunlight after attempted disinfection and steam cleaning.

Additional technical information can be obtained from our office or from the Centers for Disease Control and Prevention at <http://www.cdc.gov/norovirus>

Special considerations for **food contact surfaces** (tables, kitchen counters, food preparation areas, etc.) **and items that could potentially be placed in persons mouths** (kitchen utensils, toys or other surfaces in a child care setting, etc.):

- ❖ If the bleach solution effective against norovirus is used on these surfaces or items (or any item that could potentially end up in someone's mouth), it is important that the surface/item be rinsed off with clean water after disinfection.
- ❖ Any **food items or single-service items** (drinking straws, takeout containers, paper napkins, paper plates, etc.) that may have been in the vicinity of location where the vomit or fecal accident occurred should be immediately discarded.

## OUTBREAK SURVEILLANCE FORM – STAFF

Facility: \_\_\_\_\_

NAME	SEX	AGE	ONSET		SYMPTOMS (SEE BELOW)	JOB TITLE	JOB LOCATION	ILLNESS DURATION	STOOL COLLECTED
			DATE	TIME					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					
				AM					
				PM					

**Symptoms:** **V** = Vomiting **D** = Diarrhea **F** = Fever (provide temperature) **A** = Abdominal Cramps **H** = Headache **N** = Nausea  
**M** = Muscle Aches **C** = Chills **O** = Other (please list)

**Note:** This form is a tool for a facility to use for tracking ill persons. There is no need to routinely send this form to public health. Please send to public health only if requested.

## OUTBREAK SURVEILLANCE FORM – RESIDENTS

Facility: \_\_\_\_\_

NAME	SEX	AGE	ONSET		SYMPTOMS (SEE BELOW)	ROOM #	UNIT/ WING	HOSPITAL- IZED	ILLNESS DURATION	STOOL COLLECTED
			DATE	TIME						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						
				AM						
				PM						

**Symptoms:** **V** = Vomiting **D** = Diarrhea **F** = Fever (provide temperature) **A** = Abdominal Cramps **H** = Headache **N** = Nausea  
**M** = Muscle Aches **C** = Chills **O** = Other (please list)

**Note:** This form is a tool for a facility to use for tracking ill persons. There is no need to routinely send this form to public health. Please send to public health only if requested.

**GASTROENTERITIS (NOROVIRUS) OUTBREAK REPORT FORM FOR  
HEALTHCARE AND RESIDENTIAL FACILITIES**

Outbreaks should be reported to the local or state health department within 24 hours of being identified. When the outbreak has ended, please complete and fax this form to CDPHE or your local health department; attach additional comments, epi-curve, and/or outbreak report if available.

Reported by: \_\_\_\_\_  
Agency: \_\_\_\_\_ Title: \_\_\_\_\_

Facility name: \_\_\_\_\_  
Address: \_\_\_\_\_ City: \_\_\_\_\_ Zip code: \_\_\_\_\_  
County: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Facility contact person/title: \_\_\_\_\_

Facility type (check all that apply):  Skilled nursing  Assisted living  Rehabilitation  
 Independent living  Acute care hospital  Other: \_\_\_\_\_

Facility census at start of outbreak: # Residents \_\_\_\_\_ # Employees \_\_\_\_\_

Date of first illness onset: \_\_\_\_\_ Date of last illness onset: \_\_\_\_\_

Total number of ill residents: \_\_\_\_\_

Total number of ill staff: \_\_\_\_\_

Number of persons hospitalized: \_\_\_\_\_ Number of deaths: \_\_\_\_\_

Shortest duration of illness: \_\_\_\_\_ Longest duration of illness: \_\_\_\_\_ Median duration: \_\_\_\_\_

Primary route of transmission:  Person-to-person  Food/water\*  Other: \_\_\_\_\_

\*If foodborne/waterborne is suspected, contact CDPHE immediately. More complete investigation is needed.

Symptoms	# Residents	# Employees
Abdominal cramps		
Fever		
Diarrhea		
Bloody diarrhea		
Vomiting		
Headache		
Other:		
<b>Total people for whom this information was collected</b>		

Were stool specimens submitted to a laboratory for testing?  Yes  No

If yes, where:  CDPHE (state) lab  Other lab: \_\_\_\_\_

Date submitted (earliest date, if submitted on multiple days): \_\_\_\_\_

Stool Test Summary			
Type of Test	Total # tested	Total # positive	Organism found
Norovirus PCR			
Bacterial culture			
Other:			

**Fax completed form to: Colorado Department of Public Health and Environment (CDPHE)  
(303) 782-0338  
(Or to your local public health department)**

**Questions? Call CDPHE at (303) 692-2700**

**Please go to: <https://www.colorado.gov/pacific/cdphe/infectious-disease-guidelines-health-care-settings> for complete guidance.**