INVESTIGATION AND MANAGEMENT OF NOROVIRUS OUTBREAKS IN LONG TERM CARE FACILITIES

Colorado Department of Public Health and Environment
Communicable Disease Epidemiology Program

What is Norovirus?

• AGENT: Noroviruses (also known as Norwalk-like virus, calicivirus, and small round structured viruses) are a group of viruses that cause acute viral gastroenteritis. Gastroenteritis is inflammation of the lining of the stomach and intestines, and usually causes nausea, vomiting, and/or diarrhea. Illness caused by norovirus is often referred to as the "stomach flu". Noroviruses may account for more than 90% of gastroenteritis outbreaks not caused by bacteria or toxins. They can survive relatively high levels of chlorine (up to10 ppm) and varying temperatures (from freezing to 140°F). Humans are the only known reservoirs. Outbreaks of norovirus infection have involved many different settings, including restaurants, catered events, schools, child care centers, camps, cruise ships, swimming pools, hospitals and long term care facilities (LTCFs). Other viruses also cause acute gastroenteritis, including rotavirus (which occurs primarily in children), adenovirus, and astrovirus. These viruses are transmitted the same way as noroviruses, and control measures for outbreaks of these viruses would be the same as for norovirus outbreaks.

• INCUBATION PERIOD: 12 - 48 hours

• DURATION: 12 - 60 hours

• SYMPTOMS:
- vomiting
- diarrhea (not bloody)
- low-grade fever
- abdominal cramps
- headache
- nausea
- chills
- muscle aches
- malaise

Onset of symptoms is sudden. Vomiting is more prevalent among children, whereas, adults usually experience diarrhea. Severe dehydration, although rare, can be fatal, especially among older persons with debilitating health conditions. The illness is self-limiting. Long-term sequelae have not been reported, and there is no long-term immunity.

• TRANSMISSION/COMMUNICABILITY: Noroviruses are highly concentrated in the stool and vomitus of infected people. The viruses have a low infectious dose (< 100 viral particles), which allows for easy person-to-person transmission via the fecal-oral route. Airborne (through aerosolized vomitus) and fomite transmission may occur during outbreaks. Noroviruses can cause large, protracted outbreaks in LTCFs due to the low infectious dose, close living quarters, and potential for decreased personal hygiene among residents due to various health conditions. Attack rates during these outbreaks can be 50-70% or higher among residents as well as staff. People are most contagious from the moment they begin feeling ill until diarrhea subsides; however they can remain contagious until at least two days after recovery. Norovirus has been detected in stool as long as two weeks after exposure. Some people may have asymptomatic norovirus infection yet still shed the virus. This reinforces the need for good hygiene and handwashing.

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

What Types of Facilities do these Guidelines Cover?

These guidelines were written primarily to provide guidance for norovirus outbreaks in long term care facilities (LTCFs), however they can be adapted and used for investigation and control of norovirus outbreaks in other settings, such as assisted living facilities and residential care facilities for the developmentally disabled. As the arrangement of these other types of facilities can vary tremendously, it is recommended that pubic health agencies contact CDPHE for guidance in these situations.

What Constitutes an Outbreak?

As the presence of diarrhea in one or two residents in a LTCF is not unusual, determining when there is an outbreak can be somewhat subjective. **In general, an outbreak of gastroenteritis in a LTCF is defined as the presence of more diarrhea or vomiting than would usually be expected in the facility, or in a particular unit, for that time of year.**

An outbreak of norovirus infection may be classified as "suspect" or "confirmed":

- *Suspected norovirus outbreak:* The signs and symptoms of the illness closely resemble those of norovirus, however stool samples were not collected, stool was tested only for bacterial pathogens, or results from norovirus testing were inconclusive.
- *Confirmed norovirus outbreak*: The signs and symptoms of the illness are consistent with those of norovirus, and laboratory testing yielded results that were positive for norovirus in specimens <u>from at least two different ill individuals.</u>

In general, outbreaks fall into one of two categories: common (or point) source outbreaks, or person-to-person (or propagated) outbreaks.

- *Common (or point) source outbreak:* This type of outbreak occurs when a group of persons is exposed to an infectious agent from the same source. An example would be eating a meal prepared by an ill food handler or consuming water from the same contaminated source. When the exposure is brief (such as a single meal), the resultant cases of illness develop within one incubation period of the disease. Epidemic curves for this type of outbreak generally begin with a sharp spike in cases (examples of epidemic curves are on page 5).
- *Person-to-person (or propagated) outbreak:* This type of outbreak does not have a common source and spreads more gradually from person-to-person, usually growing as it spreads. Outbreaks of this type are common in LTCFs due to introduction of the virus by an ill visitor, staff member or new resident.

<u>Note:</u> Norovirus outbreaks in LTCFs that begin as common source outbreaks may continue as person-to-person outbreaks due to the contagious nature of the virus. Staff members can become infected and further spread the virus within the affected facility or to <u>other</u> facilities where staff members may work.

Case Definition:

During an outbreak, it is important to use specific criteria to determine which persons will be counted as “cases,” or ill people. The following case definition is recommended for a suspected norovirus outbreak in a LTCF:

> Vomiting and/or diarrhea (two or more loose stools in a 24-hour period) in a resident or staff member with onset of symptoms since (specified date) and whose symptoms have no other apparent cause. *

* The use of a new medication or laxative, or other pre-existing health conditions, can often cause gastrointestinal symptoms.

Reporting Requirements:

As with all group outbreaks, **suspected norovirus outbreaks should be reported to the local public health agency or state health department within 24 hours.** Local public health agencies are asked to report outbreaks to the CDPHE Communicable Disease Epidemiology Program (303-692-2700) as soon as possible. An isolated, individual case of norovirus infection is not a reportable condition in Colorado.

Individual Case Investigation:

If a LTCF resident develops acute gastroenteritis, the facility should investigate to determine if others are ill (i.e. if the ill person might be part of an outbreak). The facility should consider placing an ill resident on contact precautions until his or her symptoms subside and should follow facility policies for infection control in residents with gastroenteritis. The facility should be vigilant in identifying other cases of illness in both residents and staff.

Diagnosis and Laboratory Confirmation:

Outbreak control measures should not be delayed while waiting for test results as testing may take several days to complete.

The state laboratory and commercial laboratories can perform norovirus testing on a fee for service basis. LTCF’s may submit specimens to their laboratory of choice for norovirus testing.

The state laboratory performs polymerase chain reaction (PCR) for the detection of norovirus in stool and vomitus. The current fee per specimen is $103. In order to confirm the etiology of an outbreak, submitting two to six stool specimens from different individuals is recommended, as two positive specimens are necessary to consider the etiology “confirmed.” Since there is no specific treatment for norovirus infection, testing every ill person is not necessary.

While stool is preferred, vomitus specimens can also be tested for the presence of norovirus, if more readily available. If possible, specimens should be collected during the first 48 hours of illness while stool is still liquid. Otherwise, specimens collected within 7-10 days of illness

onset are acceptable. At the state laboratory, results are usually ready within 1 full business day after specimen receipt. Instructions on how LTCFs can obtain and ship a specimen to the state laboratory can be found on page 12 in these guidelines.

In rare circumstances, such as when a common source outbreak is suspected, or when there are other concerns that warrant an in-depth public health investigation, CDPHE may waive fees for norovirus testing at the state laboratory. **Local public health agencies investigating the outbreak should make arrangements with the CDPHE Communicable Disease Epidemiology Program prior to submitting these specimens to the state laboratory.** Depending on the symptoms and duration of illness, additional tests, such as bacterial culture and ova and parasite tests can be performed by the CDPHE laboratory.

Investigating a Norovirus Outbreak in a Long Term Care Facility:

(See flow chart on page 8)

{A} Is it an outbreak?

Norovirus outbreaks can occur at any time of the year, but are more common in the winter and early spring. It is not uncommon for outbreaks of norovirus to occur in LTCFs at the same time "stomach flu" is occurring in the community.

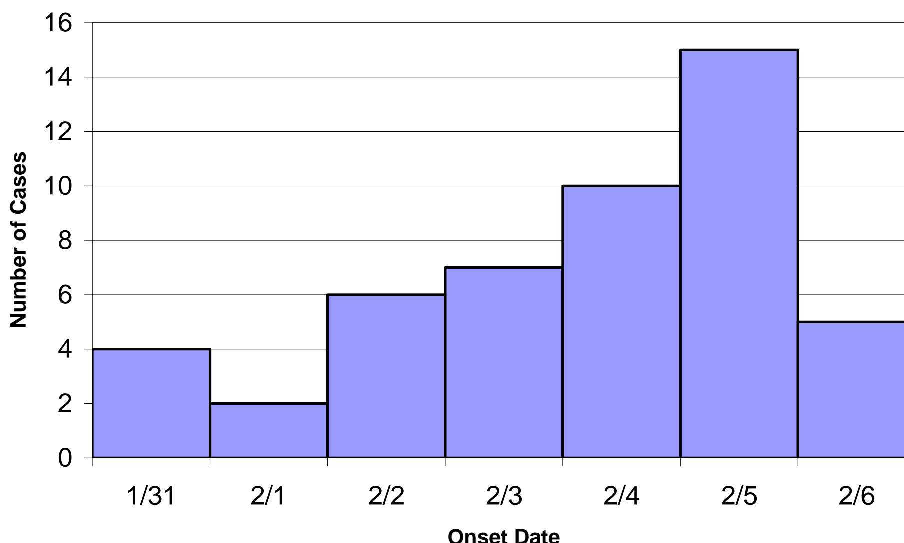
When a LTCF contacts a public health agency to report an outbreak, the first step is to confirm that an outbreak is occurring. This is not always straightforward because LTCFs do not always perform systematic surveillance for gastrointestinal illness. Often, the best approach is to speak with the director of nursing or infection control practitioner and inquire about the usual number of residents who have diarrhea and/or vomiting at any given time. If the number of reported cases exceeds what is expected, then an outbreak may be occurring. If it is unclear whether an outbreak is occurring, monitor the facility for additional cases of illness for at least one week.

{B} Preliminary Investigation:

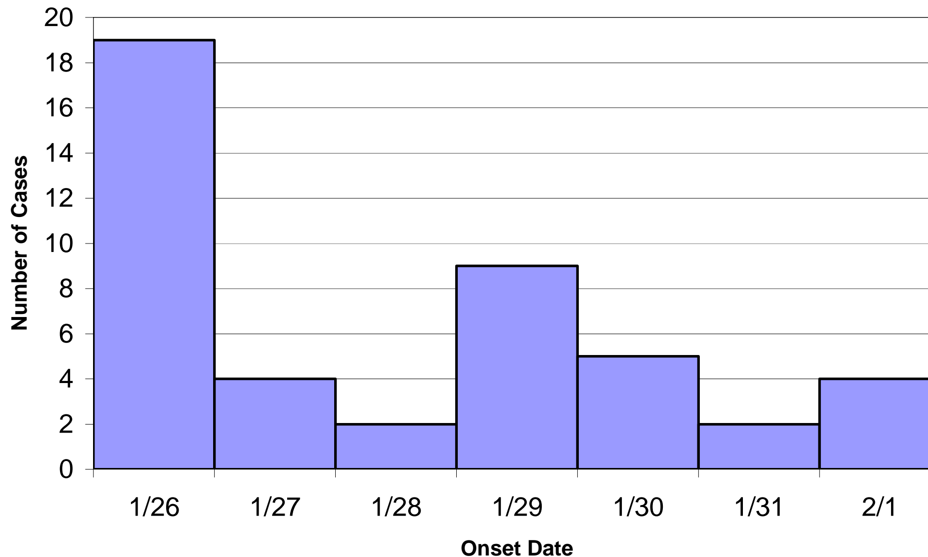
- **Local public health agencies are encouraged to perform a preliminary investigation of outbreaks of suspected norovirus that occur in LTCFs in their jurisdictions.** CDPHE is available to assist local public health agencies investigate these outbreaks.
- The goals of conducting a preliminary investigation are:
  - Determine if the outbreak is likely to be from a common source
  - Determine if norovirus is the likely cause of the outbreak
  - Determine how the outbreak is progressing through the facility
  - Implement control measures in the facility to halt progression of the outbreak
- It is appropriate and important to work closely with the facility's infection control practitioner, director of nursing, and/or administration during the preliminary investigation.
- Ask the infection control practitioner or director of nursing to collect the following information. The recommended way to gather this information is through creating a line list of all residents and staff who are ill. Sample forms for creating line lists are available on pages 13-14.
  - The number ill residents
  - The number of ill staff

- Illness onset dates and times
  - Symptoms
  - Average duration of illness
  - Distribution of illness in the facility (affected units/wings)
  - Hospitalizations/deaths
- Norovirus outbreaks are characterized by a higher frequency of vomiting, headache, and muscle aches than is common for gastroenteritis outbreaks from other causes, such as *Salmonella*. It is important to ask about these symptoms when collecting data.
- Develop and use a case definition, such as the one on page 3, for the purpose of counting the number of people who are ill (cases).
- Assist the LTCF in implementing appropriate control measures as outlined on pages 9 and 10.
- If residents and staff are still experiencing symptoms, suggest the facility collect stool specimens for norovirus testing. Instructions for the collection of specimens are found on page 12. Stool specimens may be sent to a commercial laboratory or to CDPHE for norovirus testing.
- In the absence of lab testing for norovirus, Kaplan's criteria can be used to determine whether the cause is likely to be norovirus:
  - Stools negative for bacterial pathogens
  - Mean or median duration of illness 12-60 hours
  - Vomiting in at least 50% of cases
  - Mean or median incubation period 24-48 hours
- Provide the LTCF with information about norovirus outbreaks. The last 2 pages of this document are designed to be printed and distributed to LTCFs.
- Plot an epidemic curve (epi-curve). The vertical axis (y-axis) marks the number of ill people, and the horizontal axis (x-axis) marks the illness onset date. Plot the new cases of illness that occur on each date. Two examples are shown below.

Person-to-person transmission outbreak:



Common source outbreak



- When examining epidemic curves for suspected norovirus outbreaks in LTCFs, it is important to remember that noroviruses spread very rapidly from person to person. An outbreak that begins as a common-source outbreak can rapidly turn into a propagated outbreak involving many secondary cases. This means that cases may occur over more than one incubation period (i.e. over more than 2 days). This can make interpretation of an epidemic curve somewhat challenging. In order to determine whether the outbreak began with a common exposure (and thus requires a more thorough investigation), the first few days of the outbreak should be examined. **If during the first three days of the outbreak there is a steep rise in the number of cases, a common source outbreak is likely. If, however, during the first three days of the outbreak there were only a few cases each day followed by a large increase in cases, the outbreak is more likely <u>not</u> to have a common source.**

{C} If the epi-curve suggests that the outbreak is NOT from a common source AND the symptoms are consistent with norovirus infection:

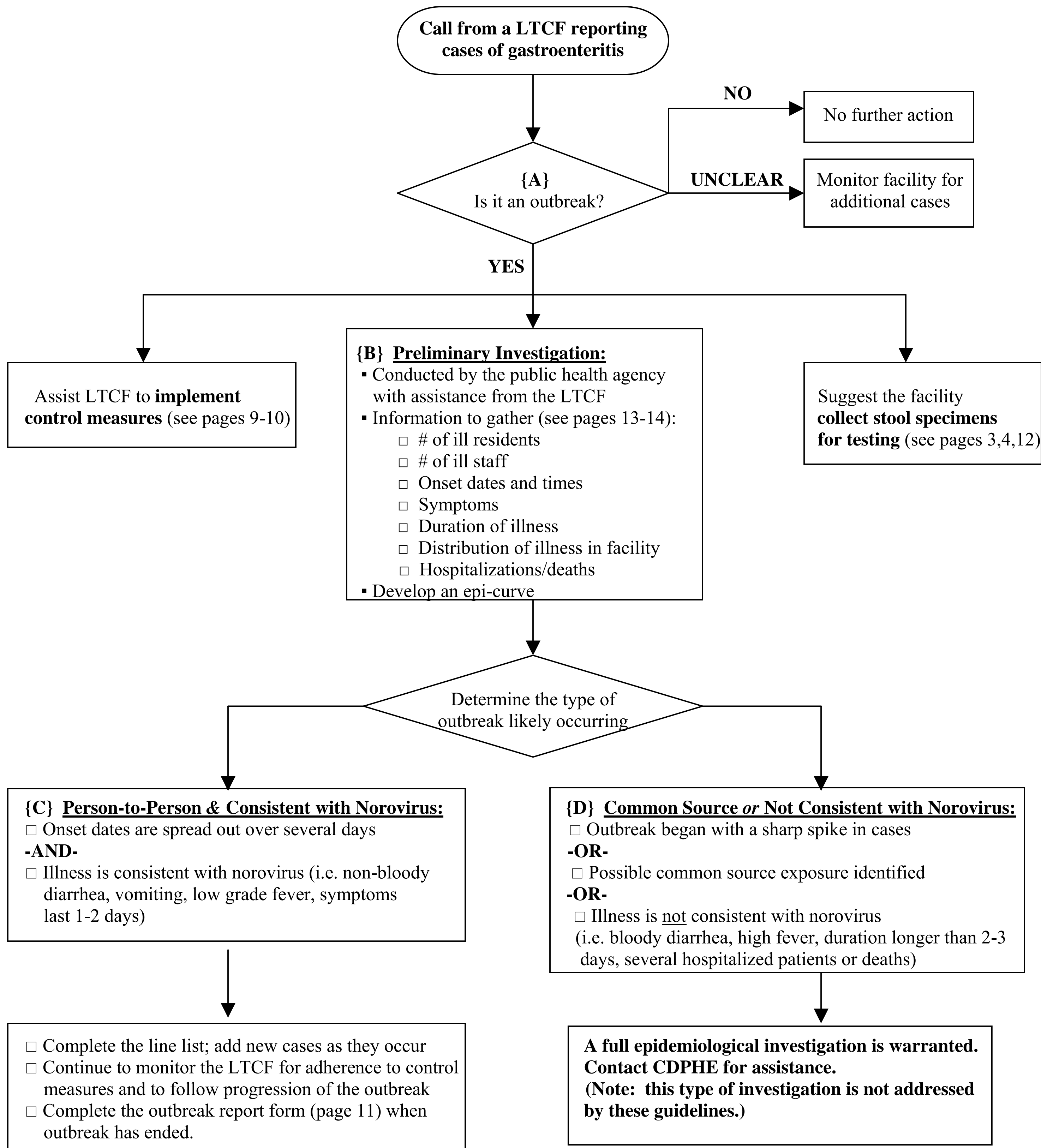
- If the symptoms are consistent with norovirus infection (i.e. vomiting, non-bloody diarrhea, low-grade fever, headache, muscle aches, nausea, abdominal cramps, chills, malaise), and the *average* duration of symptoms is one to two days, the following steps should be taken:
  - Continue to complete the line list started in section B, adding new cases as they occur. The facility should take primary responsibility for this task.
  - In order to examine the progression of illness throughout the facility, it is helpful to obtain a diagram of the facility layout and denote ill resident's rooms their onset date. The same can be done with ill staff and the area of the facility they typically work.

- Continue to monitor the LTCF for adherence to control measures and to follow the progression of the outbreak. Depending on the progression of the outbreak, this phase may last for several days or several weeks.
- In general, an outbreak can be considered "over" if at least 4 days (2 incubation periods) have passed since the onset date of the last new case (be it in a resident or staff member). However, control measures should remain in place for at least 2 weeks after the last case's onset, because infected persons can shed norovirus for up to 2 weeks after recovery.
- When the outbreak is over, complete the "Norovirus Outbreak Report Form for Long Term Care Facilities" on page 11 and return it to CDPHE.

{D} If the epi-curve suggests that the outbreak is from a common source OR the symptoms are NOT consistent with norovirus infection:

- If the outbreak began with a large number of cases, or a common exposure is identified, a common source outbreak may be occurring. **In this case, a full epidemiological and environmental investigation is warranted, which is not addressed by these guidelines.** The purpose of the full investigation is to try to identify and eliminate the source of the outbreak and implement control measures to prevent additional spread and future outbreaks of this type. **Please contact CDPHE for assistance and to arrange for stool testing at the CDPHE laboratory.**
- If the illness is not consistent with norovirus infection, a full epidemiological investigation is warranted, which is not addressed by these guidelines. The purpose of the full investigation is to determine the causative agent (e.g. *Salmonella*); identify the source; and implement control measures to prevent additional spread and future outbreaks of this type. In particular, **if any of the following circumstances apply, please contact CDPHE for assistance:**
  - Symptoms include bloody diarrhea or high fever, or any other symptom not consistent with norovirus infection.
  - The average duration of symptoms is longer than two days.
  - Several patients are hospitalized or die.

Flow chart for public health investigation of suspected outbreaks of gastroenteritis in a LTCF:
(see pages 4-7 in this section for more detailed information)



Control Measures:

Control measures should be implemented as soon as the potential outbreak is recognized. Do not wait for laboratory results. Since noroviruses may be shed in the stool for up to two weeks after symptoms subside, enhanced precautions need to be in place for at least two weeks following the last case of illness. The following control measures should be implemented:

Handwashing:

- In an outbreak situation, 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, and the following data should be systematically recorded (i.e. on a line list – see page 13): name, sex, age, illness onset date and time, symptoms, job title and location, illness duration, and if a stool specimen was collected.
- **Ill staff, especially food handlers, should be excluded from work until at least 2 days after diarrhea and vomiting have ceased, even if they are feeling well sooner.**
- **Ill staff employed at other healthcare facilities or LTCFs should also be instructed not to work at those sites until 2 days after diarrhea and vomiting have ceased.**
- Staff should not "float" between affected areas and non-affected areas.
- Non-essential staff should be excluded from the affected areas.
- Staff should use disposable single-use gloves and gowns when caring for ill residents. Gloves and gowns must be changed and hands washed before caring for each resident.
- A meeting should be scheduled with staff to review infection control procedures.
- Staff may wish to consider wearing simple face masks when cleaning areas contaminated with feces or vomit, or when caring for residents who are vomiting.

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 14): 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 2 days after cessation of vomiting and diarrhea.
- 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 (until at least 2 incubation periods have elapsed since the onset of the last case).
- Cleaning and disinfecting should occur more frequently than usual, especially bathroom, bathtub and toilet cleaning, and areas of the facility commonly touched, such as handrails and doorknobs. Using a 10% solution of household chlorine bleach (a cup of bleach per nine cups of water) or a hospital grade disinfectant is acceptable. Quaternary ammonium compounds have not been found to be effective against noroviruses.
- Common medical equipment (such as blood pressure cuffs) should be adequately cleaned and disinfected between residents. If possible, consider dedicating pieces of commonly used equipment (blood pressure cuffs, glucometers, etc.) for use in affected areas.
- Any area that becomes soiled with feces or vomit should be cleaned and disinfected promptly with a hospital grade disinfectant or bleach solution.
- Flush any vomit or feces in toilets immediately.
- Any food handled by an ill person should be properly discarded.
- Soiled linens and clothing should be handled as little as possible. They should be laundered with detergent in hot water at the maximum available cycle length and then machine dried.
- The use of disposable dishes and utensils is not necessary as regular dishwashing practices effectively removes 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.
- Visits from elderly persons, young children and persons with underlying medical conditions should be postponed until the outbreak is over.
- Symptomatic family members and friends should be asked to avoid visitation until their symptoms subside.
- Facility volunteers should be monitored for illness, and if ill, they should be excluded from volunteer work until at least 2 days after recovery.

Additional Information:

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

Communicable Disease Epidemiology	**(303) 692-2700**
After-Hours Number	**(303) 370-9395**
Laboratory Services Division (state laboratory)	**(303) 692-3090**

For additional information on norovirus, please visit the following websites:

- "Norwalk-Like Viruses" Public Health Consequences and Outbreak Management: Centers for Disease Control and Prevention
  http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5009a1.htm

- Information on norovirus, including frequently asked questions: Centers for Disease Control and Prevention
  http://www.cdc.gov/ncidod/diseases/submenus/sub_norwalk.htm

Outbreak ID:________________
(if known)

NOROVIRUS OUTBREAK REPORT FORM FOR LONG TERM CARE FACILITIES

Outbreaks should be reported to the local or state health department within 24 hours of when the outbreak is identified. Complete and forward this form to CDPHE when the outbreak has ended. Please attach additional comments, epi-curve, and outbreak report if available.

Outbreak investigator: ____
Agency: ______________________________ **Title:** _________________________

Facility name: ____
Address: ______________________________________ **County:** _______________
City: ___________________________ **State:** _________ **Zip code:** _____________
Phone: __________________________ **Fax:** ______________________________
Facility contact person: ____
Title: _________________________________ **Phone:** _______________________
Type of facility: □ Skilled nursing facility □ Assisted living □ Rehabilitation facility
□ Other: ____

Date of first onset: ____________________ **Date of last onset:** ____________________

Specimens submitted to a lab: □ Yes □ No Date submitted: ________
If yes – □ CDPHE lab □ Commercial lab:_____________
Number of specimens: _______ Number norovirus positive: ______

Total number of <u>residents</u> in facility at time of outbreak: ______________
Total number of <u>staff</u> in facility at time of outbreak: _________________

Total number of *ill* <u>residents</u>: ______________
Total number of *ill* <u>staff</u>: _________________
Number of residents hospitalized: ___________ **Number of deaths:** _________________

Symptoms	**Residents**	**Staff**
Abdominal Cramps		
Fever		
Diarrhea		
Vomiting		
Nausea		
Headache		
Other:		
Total people for whom this information was collected		

Mail or fax completed form to: Colorado Department of Public Health and Environment
Attn: DCEED-DSI-A3-3630
4300 Cherry Creek Drive South
Denver, CO 80246-1530
Phone: (303) 692-2700 Fax: (303) 782-0338

STOOL/VOMITUS COLLECTION INSTRUCTIONS FOR NOROVIRUS TESTING AT THE CDPHE LABORATORY

For specimen submission questions, please call the CPDHE lab at 303-692-3494
To order laboratory requisition forms or specimen collection supplies, call: (303) 692-3086

- Specimens should be collected as soon as possible after the onset of illness.
- Collect one specimen from two to six different ill individuals.
- Stool may be collected in bulk specimen containers issued by the CDPHE laboratory or in other clean plastic containers with screw tops lids. In LTCFs, sterile urine cups are ideal containers. **Be certain the lid makes a tight seal with the cup.**
- Specimens must be refrigerated until delivered to the laboratory.
- **Acceptable specimens: stool, vomitus**
- **Specimens will NOT be accepted if they leak in transit; are received more than 72 hours after collection; or have missing, incomplete or illegible labeling or documentation.**

1. **STOOL SPECIMENS:** Stool can be passed directly into the specimen container if possible. Only 3-4 teaspoons is needed. Stool can also be collected in the following manner:
   a. Wash hands
   b. Urinate into toilet and flush.
   c. Place two pages of newspaper or one sheet of plastic wrap across the toilet seat.
   d. Make a slight depression in the center of the newspaper or plastic wrap.
   e. Pass stool onto newspaper or plastic wrap.
   f. Use the plastic spoon to transfer 3-4 teaspoons of stool into the specimen container.
   g. Throw the plastic spoon away.
   h. Wash hands again.
2. **VOMITUS SPECIMENS**: Vomitus can be collected directly into the specimen container if possible (only 3-4 teaspoons is needed). Vomitus can also be collected in the manner described in step 1, or the plastic spoon can be used to transfer vomitus from a different container into the specimen container.
3. Place the cap **securely** on the container.
4. Label the container clearly with the patient's name and date of birth.
5. Place the container in the zip-top biohazard bag and seal the bag.
6. Complete Requisition Form #270. These forms can be ordered at the number above. **Check the "Norovirus PCR" box in the Virology section. Complete a lab request form for each specimen and be sure to include name, DOB, and collection date.**
7. Fold and place the completed lab request form in the side pocket of the biohazard bag.
8. Keep the specimen refrigerated (do not freeze) until delivered to the lab.
9. Shipping (if courier service is not available): Place the specimen, lab request form, and biohazard bag into an insulated shipping container with a cold pack, an itemized list of contents, and packing material for padding. Seal the box with packing tape and attach a biohazard sticker and shipping label.
10. Specimens must be received at the laboratory as soon as possible after collection. Ship by the most rapid means possible to: **CDPHE Laboratory Services Division – Molecular Science Laboratory, 8100 Lowry Blvd., Denver, CO 80230-6928**

OUTBREAK SURVEILLANCE FORM – STAFF

Facility: ______________________________

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

OUTBREAK SURVEILLANCE FORM – RESIDENTS

Facility: ____

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

SUMMARY OF GUIDELINES FOR INVESTIGATION AND MANAGEMENT OF NOROVIRUS OUTBREAKS IN LONG TERM CARE FACILITIES

Colorado Department of Public Health and Environment
Communicable Disease Epidemiology Program

Agent: Noroviruses cause acute viral gastroenteritis. In long-term care facilities (LTCFs), outbreaks of gastroenteritis caused by noroviruses are fairly common (especially in the winter), but 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 2 days after recovery. This reinforces the need for good hygienic practices.
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:

- **CDPHE or the local public health agency should be notified within 24 hours.** CDPHE (303-692-2700) is available to assist LTCFs and local public health agencies investigate these outbreaks and review appropriate control measures.
- Stool specimens may be submitted to a commercial laboratory or to CDPHE for norovirus testing on a fee for service basis. Specimens should be collected during the first 48 hours of illness while stool is still liquid; two to six specimens from different ill individuals should be collected.
- **Outbreak control measures should not be delayed while waiting for test results.**
- At the minimum, the following information should be documented 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.

Control: If a LTCF is experiencing an outbreak of gastroenteritis, the following control measures should be implemented. Enhanced precautions need to be in place for at least two weeks following the last case of illness.

HANDWASHING:

- Staff, residents, volunteers and visitors must be more conscientious about handwashing and infection control. Everyone in the facility should wash their hands more frequently.
- Hand sanitizing gels and lotions can be used in addition to proper handwashing.

STAFF:

- Ill staff and volunteers, especially food handlers, should be excluded from work until 2 days after diarrhea and vomiting cease, even if they are feeling well sooner.
- Ill staff members employed at other healthcare facilities or LTCFs should be instructed not to work at those sites until 2 days after diarrhea and vomiting have ceased.
- Staff should not "float" from affected areas to non-affected areas of the facility.
- Non-essential staff should be excluded from the affected areas.
- Staff should use disposable single-use gloves and gowns when caring for ill residents.
- Staff may want to consider wearing masks/respiratory protection when cleaning areas contaminated with feces or vomit, or when caring for a resident who is vomiting.
- A meeting should be scheduled with staff to review infection control procedures.

RESIDENTS:

- Group activities should not occur among affected residents/units until the outbreak is over.
- Ill residents should be placed on contact precautions and should be restricted to their rooms as much as possible until at least 2 days after cessation of vomiting and diarrhea.
- 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 <u>not</u> 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 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 (until at least 2 incubation periods have elapsed since the onset of the last case).
- Cleaning and disinfecting should occur more frequently than usual, especially bathroom, bathtub and toilet cleaning, and areas of the facility commonly touched, such as handrails and doorknobs. Using a 10% solution of household chlorine bleach (a cup of bleach per nine cups of water) or a hospital grade disinfectant is acceptable.
- Any area that becomes soiled with feces or vomit should be cleaned and disinfected promptly with a hospital grade disinfectant. Flush any vomit or feces in toilets immediately.
- Soiled linens and clothing should be handled as little as possible. They should be laundered with detergent at the maximum available cycle length and then machine dried.
- Any food handled by an ill person should be properly discarded.
- Common medical equipment should be adequately cleaned and disinfected between residents. Consider dedicating pieces of commonly used equipment for use in affected areas.
- The use of disposable dishes and utensils is <u>not</u> necessary as regular dishwashing practices effectively removes any pathogens.
- Post signs that the facility is experiencing an increase in gastrointestinal illness.
- Visits from elderly persons, young children and persons with underlying medical conditions should be postponed until the outbreak is over.
- Ill family members and friends should be asked to avoid visitation until symptoms subside.

To report an outbreak or for assistance, please contact your local health department or the CDPHE Communicable Disease Epidemiology Program at (303) 692-2700 (after hours number: (303) 370-9395).