

CONTROL OF VIRAL GASTROENTERITIS OUTBREAKS IN ILLINOIS LONG-TERM CARE FACILITIES

Communicable Diseases
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June 2006

We greatly appreciate the use of material from the "Control of Viral Gastroenteritis Outbreaks in California Long-term care facilities". California Department of Health Services. Division of Communicable Disease Control. In Conjunction with Licensing and Certification and for information from other state health departments including Virginia, Colorado, Michigan, Wisconsin and Texas.

Introduction

Outbreaks of gastroenteritis in long-term care facilities (LTCFs) are not uncommon. Viruses cause most outbreaks of gastroenteritis, and they are almost always transmitted from person-to-person (including residents, staff, visitors and volunteers), and occasionally by contaminated food or drinks. Occasionally objects contaminated with apparent or inapparent feces may be a source of illness. These outbreaks can be detected early by recognizing the typical symptoms of illness, and may be controlled by taking specific steps to prevent the virus from being transmitted from person-to-person. When appropriate steps are not taken, outbreaks can continue for weeks with at least half the residents and many of the staff becoming ill, with some residents hospitalized and occasionally dying from dehydration and other complications of vomiting and diarrhea.

The Illinois Department of Public Health (IDPH), Division of Infectious Diseases adapted material from the California Department of Health Services (CDHS) Division of Communicable Disease Control and other state health departments for these recommendations. This information is intended to be advisory only and was developed to assist facility infection control committees in the development of a rational approach to the control of viral gastroenteritis outbreaks in LTCFs.

What causes viral gastroenteritis in LTCFs?

Gastroenteritis is inflammation of the stomach and intestines. This usually results in vomiting and/or diarrhea. Outbreaks of viral gastroenteritis in LTCFs are almost always due to a group of viruses called caliciviruses, which includes the noroviruses (formerly called Norwalk-like viruses). Bacteria such as *Salmonella*, *Shigella*, or *Campylobacter* also occasionally cause gastroenteritis in LTCFs, but are more likely to be foodborne and the patterns of illness that occur are usually different from viral gastroenteritis.

Norovirus outbreaks can occur at any time of the year, but are more common in the winter and spring.

What are the signs and symptoms of viral gastroenteritis?

The main symptoms of viral gastroenteritis are vomiting and diarrhea. Vomiting is usually a prominent symptom but may be infrequent or absent in an individual. Diarrhea tends to be watery, short-lived and less severe than that which results from gastroenteritis caused by bacteria. The affected person may also have headache, fever (usually low-grade), chills, body aches and abdominal cramps ("stomach ache"). These symptoms can occur in various combinations during an outbreak. Illness begins 24 hours to 48 hours following exposure to a resident or employee who is ill or incubating the infection or following consumption of contaminated food or drink. The illness is generally mild and of short duration (one to two days), although some individuals may continue to feel weak and may become dehydrated. Generally, immunity occurs following infection but lasts only a short time, so that everyone is at risk of becoming

infected again, from the same virus, five or six months later. Up to 30 percent of persons may be asymptomatic.

How is viral gastroenteritis spread?

Humans are the only known reservoir for noroviruses. Noroviruses are spread when material contaminated by stool or vomitus from an infected person is ingested. Noroviruses are extremely infectious. It takes only a few particles, so small that they cannot be seen with an ordinary microscope, to cause illness. Millions of particles are present in the stool or vomitus of someone who is sick. Excretion of virus in stool begins a few hours before the onset of symptoms and reaches a maximum 24–72 hours after exposure. The virus can continue to be present in the stool of infected persons for a week or more, even after they recover or even if they have never been sick. In a LTC facility the virus is spread primarily through contamination of the hands of persons who are ill. It is impossible to be sure that hand washing eliminates the virus from the hands of someone who has diarrhea. Ill healthcare workers dispensing medication have been responsible for person-to-person transmission in some outbreaks.

Vomiting may also suspend viral particles in the air, resulting in contamination of the environment. Noroviruses can remain infectious on environmental surfaces for many days and are relatively resistant to disinfection, heat, and cold.

Noroviruses can cause protracted outbreaks in LTCF due to the low infectious dose, close living quarters and reduced personal hygiene due to health conditions. Attack rates can be as high as 50% to 70% in residents and staff.

Can viral gastroenteritis be spread by food and water?

Noroviruses can also be transmitted by food and water. This is uncommon in LTCFs where transmission is usually from person-to-person. Food preparers or handlers who have viral gastroenteritis may contaminate food, especially if they do not wash their hands regularly after using the bathroom or do not wear gloves while handling food. Cold foods such as salad and sandwiches have been a source for outbreaks more frequently than foods served hot, these viruses do not survive the heating process. Shellfish may be contaminated by sewage, but are unlikely to be served in LTCFs. Drinking water or ice can also be contaminated due to faulty plumbing and be a source of these viruses.

What are the reporting requirements for outbreaks of viral gastroenteritis in LTCFs?

Outbreaks of gastroenteritis in LTCFs are reportable to the local health department within 24 hours of the identification of the outbreak and should be reported to IDPH long-term care. The LHD should report to IDPH Communicable Disease as soon as possible, within 24 hours.

The outbreak should be reported to the LHD from the facility and the LHD should be provided with the following information:

1. Number of residents and staff ill with vomiting and/or diarrhea
2. Location/wing of ill persons
3. Total number of residents and staff in the facility by wing or floor
4. Date of onset of symptoms for each ill person
5. Type of symptoms for each ill person and % of the total number ill with each symptom
6. The average duration of illness, and any hospitalizations of ill persons.
7. A list of food service staff along with their primary responsibilities and any illnesses in these individuals
8. Information on any special meals, extracurricular activities, or special events held in the three days before illnesses started
9. Provide a dietary menu for the three days before illnesses started

How is viral gastroenteritis diagnosed?

Viral gastroenteritis cannot be diagnosed by traditional stool cultures or examination of stool for ova and parasites. Noroviruses can be identified by polymerase chain reaction (PCR), which is available at the IDPH laboratory upon approval by IDPH Communicable Disease staff. This requires fresh (unfrozen) stool. It is best to obtain specimens while a case is still symptomatic. However, PCR can remain positive for at least a week after the symptoms have resolved. While PCR can be completed within one day of starting the testing, decisions to institute control of a possible outbreak should not be delayed while waiting for results.

What is the treatment for norovirus infection?

There is no specific treatment for norovirus infection. Supportive therapy includes therapy to replace fluids and electrolytes.

How can an outbreak of viral gastroenteritis be identified?

The goal of investigations should be to identify the pathogen, characterize the outbreak by person, place and time and to implement control measures. Facilities should establish and maintain a program of surveillance for viral gastrointestinal disease. An outbreak of viral gastroenteritis should be suspected when there is more diarrhea or vomiting than would usually be expected in the facility or unit for that time of the year. Vomiting, often projectile, is usually present in at least half of those ill. Other symptoms may include nausea with or without vomiting and low grade fever. The following factors may indicate a norovirus outbreak if no laboratory confirmation is possible: stool specimens negative for bacterial and parasitic pathogens, the percent vomiting over 50 percent, the median/mean illness duration of 12-60 hours and the mean/median incubation of 24-48 hours. An outbreak can be considered confirmed if the same pathogen is identified in two or more ill persons.

How can a LHD investigate an outbreak of viral gastroenteritis in a LTC facility?

Outbreaks in LTC facilities are often difficult to conduct; food consumption recall of LTC residents is usually quite poor. Notify IDPH Communicable Disease staff. A questionnaire for residents is included in this document. It can be very difficult to establish whether the transmission is food-borne or person-to-person. Information that can be helpful in evaluating the transmission mode includes:

1. Producing an epidemic curve (Graphing the onset dates on the x- axis and the number of ill on the y axis) to establish whether the graph resembles a common-source outbreak or person-to-person spread. Ills included in your epidemiologic analysis should have diarrhea (three or more loose stools within a 24 hour period) and/or vomiting. A common source outbreak can be due to a food or water source. In a common source outbreak most cases will occur within one incubation period. If during the first days of the outbreak there is a steep rise in cases, then a common source outbreak is likely. If during the first three days of the outbreak, there are a few cases followed by a steep increase, then the outbreak is likely person-to-person.
2. Evaluating where in the facility the illnesses are occurring. In a foodborne or waterborne outbreak of viral gastroenteritis, one would expect that if all residents are eating the same contaminated food or water that cases would be occurring in many wings of the facility. If the cases are limited to one or two wings in a large facility, person-to-person spread may be more likely.
3. A food facility inspection should be performed to evaluate whether food handling staff were ill in the days before the onsets began in residents. This may indicate that a food source may have started the outbreak in the facility.
4. Collect stool specimens from two to six residents or staff who are ideally still symptomatic. Collect stool in a clean container such as a urine specimen container and refrigerate. Stool collected in Cary-Blair media is not ideal for norovirus testing. Vomitus can also be tested for norovirus, if stool is not readily available. To rule out bacterial causes some stools can be collected in Cary-Blair and tested for bacterial enteric pathogens. Check with IDPH Communicable Disease staff to have this testing approved and so they can ensure that the lab knows the specimens are coming. Do not ship over the weekend or on holidays. Food or water would be tested for fecal coliforms only if there was some indication of these items as the source of illnesses. Consult with IDPH about testing of foods or water.
5. Submit a completed CDC foodborne outbreak investigation form if the outbreak is determined to be foodborne. Many times the food(s) contributing to the outbreak will remain unknown due to difficulties in obtaining food histories. If the outbreak is determined to be person-to-person a form is attached that can be used to provide a summary of the outbreak.

How is an outbreak of viral gastroenteritis controlled?

Hand hygiene is one of the most important infection control measures to prevent the spread of infection. Hand hygiene is a general term that applies to either handwashing with plain or antiseptic-containing soap and water or use of alcohol-based hand rubs. Alcohol-based hand rubs should not be used when hands are visibly soiled. Interrupting person-to-person transmission will control most outbreaks of viral gastroenteritis. There is probably little that can be done to prevent the initial introduction of the virus, since an infected healthcare worker or visitor may be shedding the virus even before they are ill, or may never be symptomatic. The following recommendations (but not requirements) may assist facility personnel in controlling an outbreak of viral gastroenteritis. The actions taken by individual LTC facilities may vary with the number of cases and mode of transmission within the facility. An outbreak may be considered to be over if at least four days (two incubation periods) have passed since the last new case. Keep control measures in place for at least two weeks after the onset of the last case because the virus can be shed for up to two weeks following onset.

On the microscopic level, norovirus has surface properties that make it difficult to kill with alcohol or many other antimicrobial compounds used in hand hygiene products. Because of this, the use of gloves should be emphasized to reduce the likelihood of the virus accumulating on caregivers' hands. Hand hygiene, especially proper handwashing with soap and water which physically removes viral particles and washes them down the drain, is of paramount importance. Hand hygiene should be performed before and after contact with patients or their environment.

Staff

1. Each nursing unit should immediately report any resident(s) or staff member(s) with symptoms of viral gastroenteritis to the infection control professional or the Director of Nurses. New cases should be recorded daily using a case log. (See attached)
2. Notify the medical director about the outbreak.
3. Symptomatic staff (including food handlers) and volunteers should not be allowed to work while diarrhea is present and ideally, should stay home until symptom-free for 48-72 hours.
4. Discontinue "floating" staff from the affected unit to non-affected units, if possible.
5. A glove policy should be recommended for food handlers while the outbreak is ongoing because they may start shedding before becoming symptomatic
6. Maintain the same staff-to-resident assignments, if possible.
7. Exclude non-essential personnel from affected units.
8. In addition to Standard Precautions, use Contact Precautions:
 - a. Wear gloves and gown when entering the room. Change gloves when working with a resident if moving from potentially contaminated areas to clean areas. Change gown between contacts with roommates.
 - b. Remove gloves and gown after contact with potentially contaminated area or person. Remove gloves and gown before leaving the resident's room and immediately perform hand hygiene.

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- c. After glove and gown removal and hand hygiene, ensure that hands and clothing do not touch potentially contaminated areas in the resident's room.

Residents

1. Minimize movement of residents. Residents should not be moved from an affected to an unaffected nursing unit. The value in moving asymptomatic residents who have been exposed (e.g., to a symptomatic roommate) is uncertain since they may already be infected. Continue to confine symptomatic residents to their rooms.
2. Consider use of antiemetics for patients with vomiting.

Facility

1. Notify the local health department and the IDPH long-term care staff with jurisdiction over your facility within 24 hours. Consult with the local health department about laboratory testing so that the stool can be collected in the appropriate manner.
2. Restrict sharing of communal food/snack items and foods brought from home.
3. Cancel or postpone group activities until ill individuals are asymptomatic for at least 48 hours.
4. Do not use self-service food bars and do not let residents/staff serve themselves in any manner that might promote direct contact with shared foods. Any food handled by an ill person should be properly discarded. The use of disposable dishes and utensils is NOT necessary as regular dishwashing practices effectively remove any pathogens.
5. Educate residents, staff and visitors prior to patient contact, snacks and meals and after using the restroom on proper technique and promote hand washing. Alcohol-based hand rubs (gel or foam) can be used in situations where it is not possible to do proper hand washing.
6. Food testing for fecal coliforms should be conducted only if there is an epidemiologic link between a food and illness. Call IDPH Food, Drugs and Dairies or Communicable Disease Control personnel for approval of testing.
7. Hand washing posters should be prominently posted in the facility.
8. Inspection of the water supply and food service establishment should be done by a licensed sanitarian. This should establish whether plumbing problems exist or whether food handlers may have been ill prior to the residents' illnesses. The LHD and IDPH LTC personnel may be able to coordinate one visit to perform the inspection.
9. Dedicate the use of patient-care equipment to a single resident or among similarly symptomatic residents. If the use of common equipment or items is unavoidable, then adequately clean and disinfect equipment before use for another resident.
10. Limit new admissions until the incidence of new cases has reached zero. If new admissions are necessary, admit resident to an unaffected unit or to a unit that has had no new cases for at least two days.

11. Clean and disinfect vomit and fecal spillages promptly. "Airborne" transmission may be a significant contributor to the number of cases since projectile vomiting can give rise to aerosols. Air currents generated by open windows or air conditioning will disperse aerosols widely. Air currents should be minimized.
12. Increase the frequency of routine ward, bathroom and toilet cleaning. Particular attention should be given to cleaning objects that are frequently handled such as faucet and door handles, and toilet or bath rails. Consider the use of respiratory protection (i.e. surgical or procedure masks) for cleaning staff where aerosols may be present following vomiting, or generated by cleaning activity. This enhanced cleaning should continue for at least 72 hours after the last documented case. Persons cleaning areas heavily contaminated with vomitus or feces should wear a mask.
13. See disinfection section for other details.
14. Keep records of the number of residents who require hospitalization during the outbreak and outcome of the illness. Although fatalities from norovirus are rare, keep records of which residents died during the outbreak. Determine if the hospitalization or death was related to complications of gastroenteritis, such as dehydration, or was attributed to underlying disease.
15. Notify visitors about the existence of an outbreak and what precautionary measures should be followed. An example sign is provided at the end of this document.
16. Objects that are shared between residents, such as pianos or playing cards should be discarded or cleaned thoroughly and regularly.

Visitors

1. Visitors should refrain from visiting the facility while ill. To decrease isolation of residents, visitors can make more frequent phone calls.

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Disinfection

Examples of items to disinfect:

Doorknobs, faucets, sinks, toilets, commodes, bath rails, phones, counters, chairs (including backs), tables, hand rails, elevator buttons, light switches, mattress covers, aprons, uniforms, linens, bedding and ice machines.

Disinfectants: There are no specific hospital disinfectants registered by the U.S. Environmental Protection Agency (EPA) that have specific claims for activity against noroviruses. In the absence of such products, CDC recommends that chlorine bleach be applied to hard, non-porous, environmental surfaces in the event of a norovirus outbreak. Use a freshly prepared sodium hypochlorite solution (e.g., a 10% solution of household chlorine bleach (one part bleach to nine parts water) to disinfect surfaces contaminated with feces or vomitus with the proper duration of contact as designated by the manufacturer. Quaternary ammonium disinfectants do not appear to be effective against noroviruses. Leave bleach on surface for 10-20 minutes then rinse with clean water.

Specific clean-up procedures

Use a two-step process for cleaning large spills of vomitus or stool

1. Visible/organic debris should be cleaned up with absorbent material (double layer) and discarded in a plastic bag to minimize aerosols
2. Liberally disinfect area and objects surrounding the contamination with an appropriate environmental disinfectant (multiple applications may be required).
3. Ensure appropriate dilution and contact time for the appropriate environmental disinfectant.

Hard surfaces

- Disinfect with bleach solution, rinse with water if food preparation area

Carpet/upholstered furniture

- Noroviruses may remain viable for up to 12 days in carpeting or other environmental surfaces. Visible debris should be cleaned with absorbent material (double layer) and discarded in a plastic bag to minimize aerosols- disinfecting with bleach may discolor carpet-steam clean (heat inactivation) 158° F for 5 minutes or 212 ° F for 1 minute for complete inactivation. Dry vacuuming is not recommended due to possible aerosolization.

Linens/clothing/textiles

- If soiled, vomit or stool should be carefully removed to minimize aerosols. Keep contaminated and uncontaminated clothes separated. Minimize disruption of laundry. Aerosols created may pose a risk for transmission. Wash items in a pre-wash cycle, then use a regular wash cycle using detergent and dried separately from uncontaminated clothing at high temperature greater than 170° F. Ensure segregation of clean and soiled linens/clothing/textiles.

- Contaminated bedding should be placed carefully into laundry bags without generating further aerosols. Minimize the number of staff handling this material. Contaminated pillows should also be laundered unless they have an impermeable cover, in which case they should be disinfected. Contaminated bedding should be washed separately in hot water for a complete wash cycle- ideally as a half load for best dilution.

Surfaces corrodible/damageable by bleach

- EPA-registered phenolic solutions (concentrated Lysol® or concentrated Pinesol®) mixed at 2-4 x the manufacturer's recommended concentration. Read manufacturer's warning for health concerns.

FACILITY NAME

(2004-XXX)

XXXX COUNTY

Name _____ Age _____ Sex F M

resident staff location (wing, unit) _____ room # _____ other xxxx _____

BACKGROUND QUESTIONS (For Residents Only)

Y	?	N	
A	<input type="checkbox"/>	<input type="checkbox"/>	Does this person have a special or restricted diet?
B	<input type="checkbox"/>	<input type="checkbox"/>	Do they eat solid food?
C	<input type="checkbox"/>	<input type="checkbox"/>	Are they ambulatory?
D	<input type="checkbox"/>	<input type="checkbox"/>	Would they be capable of answering questions about foods they may have eaten recently?
E	<input type="checkbox"/>	<input type="checkbox"/>	Is a record kept of the foods this person eats?
F	<input type="checkbox"/>	<input type="checkbox"/>	Do they have their own telephone?
G	<input type="checkbox"/>	<input type="checkbox"/>	Do they share a room?
H	<input type="checkbox"/>	<input type="checkbox"/>	If yes, has their roommate recently had any similar illness?

BACKGROUND QUESTIONS (For Staff Only)

Y	?	N	
K	<input type="checkbox"/>	<input type="checkbox"/>	Does this person help to feed residents?
L	<input type="checkbox"/>	<input type="checkbox"/>	Does this person eat food prepared in the facility's kitchen?
M	<input type="checkbox"/>	<input type="checkbox"/>	Does this person have regular physical contact with residents?
N	<input type="checkbox"/>	<input type="checkbox"/>	In the 3 days before onset of symptoms, did this person assist or clean up after a sick person?
Describe this person's general duties:			
R	<input type="checkbox"/>	food service	S <input type="checkbox"/> housekeeping
T	<input type="checkbox"/>	patient care	U <input type="checkbox"/> admin/clerical
V	<input type="checkbox"/>	maintenance	W <input type="checkbox"/> _____

SIGNS AND SYMPTOMS

Check Y ? or N for each item.

Y	?	N		Y	?	N	
H	<input type="checkbox"/>	<input type="checkbox"/>	headache	L	<input type="checkbox"/>	<input type="checkbox"/>	shaking chills
N	<input type="checkbox"/>	<input type="checkbox"/>	nausea	D	<input type="checkbox"/>	<input type="checkbox"/>	any diarrhea or loose stools
V	<input type="checkbox"/>	<input type="checkbox"/>	vomiting	3	<input type="checkbox"/>	<input type="checkbox"/>	if yes to diarrhea, were there 3 or more loose stools within any 24-hour period?
M	<input type="checkbox"/>	<input type="checkbox"/>	myalgia (muscle aches)	B	<input type="checkbox"/>	<input type="checkbox"/>	any blood in stools
C	<input type="checkbox"/>	<input type="checkbox"/>	abdominal (stomach, belly) cramps	W	<input type="checkbox"/>	<input type="checkbox"/>	any watery stools
T	<input type="checkbox"/>	<input type="checkbox"/>	unusual fatigue (feeling tired)	Z	<input type="checkbox"/>	<input type="checkbox"/>	other _____
F	<input type="checkbox"/>	<input type="checkbox"/>	fever (if yes, <input type="checkbox"/> subjective or _____° (max.)				
G	<input type="checkbox"/>	<input type="checkbox"/>	abnormal bloating or excess gas				

ONSET AND DURATION

On what date did they start vomiting or having diarrhea (whichever came first)? ___/___/___ (m/d/y)

At what time did the vomiting/diarrhea begin? [Be as specific as possible; if necessary, estimate.]

_____ am noon _____ pm midnight (end of day)

Are they still having any vomiting or diarrhea now? yes no

If no, how long did the vomiting or diarrhea last? ___ minutes ___ hours ___ days

SEVERITY OF ILLNESS Check all that apply; provide details (names, dates, phone numbers, etc.) at right.

Y	?	N	Did they/were they...
W	<input type="checkbox"/>	<input type="checkbox"/>	miss any work? (staff only) if yes, how many days? _____
P	<input type="checkbox"/>	<input type="checkbox"/>	see any clinician? if yes, whom?
E	<input type="checkbox"/>	<input type="checkbox"/>	visit an ER? if yes, date? ___/___/___ (m/d/y) where? _____
S	<input type="checkbox"/>	<input type="checkbox"/>	give a stool specimen? if yes, when/to whom
H	<input type="checkbox"/>	<input type="checkbox"/>	get admitted to hospital overnight? if yes, how many nights? _____ dates ___/___/___ (m/d/y) where? _____



ATTENTION VISITORS!!!

We presently have a number of ill residents. Please wash your hands before visiting and before leaving. You may wish to reconsider visiting at this time.

If you have any questions please contact either the Administrator _____ or the Director of Nursing _____.

Thank you

Non Foodborne-Non Waterborne Outbreak Final Report.

County _____ Local Health Department _____
Date of report submission ___/___/___ Person submitting _____
Site of outbreak-name _____ **Outbreak Number** _____

Description of Outbreak:

Etiologic agent (please circle)

E. coli O157:H7 (not foodborne not waterborne) *Shigella* (not foodborne not waterborne)
Histoplasmosis *S. aureus*, methicillin resistant (MRSA)
Legionella (non recreational water) Other _____
Norovirus type _____ Unknown
Salmonella (not foodborne)

Mode of Transmission (please circle)

Person-to-person Direct Contact
Inhalation, respiratory droplets Product, describe _____
Inhalation, airborne transmission Other _____
Inhalation, not further specified Unknown

Type of Facility (please circle)

Licensed Long-term care facility Community/city
Retirement community Day care facility
Assisted living facility Camp Setting
Hospital Prison/Jail
Developmentally disabled facility School
Other _____ Petting zoo

Date of first exposure ___/___/___ Date of last exposure ___/___/___

Date of first onset ___/___/___ Date of last onset ___/___/___
(Please provide epi curve if available)

Total number of persons exposed _____
Total number meeting case definition for illness _____
Of the total meeting case definition, number laboratory confirmed _____ number tested _____
Of the total meeting case definition, number staff ill _____ and number of residents ill _____
Of the total meeting case definition, number hospitalized _____, number fatalities _____

What type of testing was performed on human specimens _____

Location of ill within the facility _____

Describe Illness (percent of ill with each symptom) _____

Were any environmental specimens taken? YES NO, if yes please describe _____

Describe any factors which contributed to the outbreak _____
Prevention measures taken _____