

RECOMMENDATIONS FOR THE PREVENTION AND CONTROL OF VIRAL GASTROENTERITIS OUTBREAKS IN CALIFORNIA LONG-TERM CARE FACILITIES

**California Department of Health Services
Division of Communicable Disease Control
In Consultation with Licensing and Certification Program**

850 Marina Bay Parkway
Richmond, California 94804

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ARNOLD SCHWARZENEGGER
Governor
State of California



Kimberly Belshé, Secretary
Health and Human Services Agency

Sandra Shewry, Director
Department of Health Services

Introduction

Outbreaks of gastroenteritis in long-term care facilities (LTCFs) are not uncommon, and can become epidemic during the winter and early spring. Viruses (norovirus specifically) cause most of these outbreaks, and they are almost always transmitted from **person-to-person** (including residents, staff, visitors and volunteers). Norovirus can persist in the environment and is resistant to most disinfectants, and as a result **contamination of the environment** plays a key role in transmission. Only occasionally is an outbreak in a LTCF caused by contaminated food.

While norovirus infection is usually mild in otherwise healthy adults, illness can be severe in the elderly, particularly in those with underlying medical problems. In one recent 2-year period (July 2002 - June 2004), California had 480 reported outbreaks of viral gastroenteritis. Over half the outbreaks occurred in LTCFs, and 80% of these were in skilled nursing facilities (nursing homes). In these nursing homes over 6500 persons became ill, 120 residents were hospitalized, and 29 died.

Norovirus outbreaks can be detected early by recognizing the typical symptoms of illness, and can be controlled by promptly taking specific steps to prevent the virus from being transmitted from person-to-person. When appropriate infection prevention and control measures are **not** implemented immediately, outbreaks can continue for weeks with many residents becoming ill resulting in some hospitalizations and occasionally death from dehydration and other complications of vomiting and diarrhea.

The California Department of Health Services (CDHS) Division of Communicable Disease Control developed these recommendations in consultation with the Licensing and Certification Program. 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. This is an update of the guideline initially released in 2002. A comprehensive guide to the prevention and control of gastroenteritis in LTCFs is available at <http://www.dhs.ca.gov/ps/dcdc/disb/disbindex.htm>. Information on norovirus is available from CDC at http://www.cdc.gov/ncidod/diseases/submenu/sub_norwalk.htm.

What causes viral gastroenteritis in LTCFs?

Gastroenteritis is an inflammation of the stomach and intestines. This usually results in vomiting and/or diarrhea. Outbreaks of gastroenteritis in LTCFs are almost always due to a group of viruses called caliciviruses, which includes norovirus. 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.

What are the signs and symptoms of viral gastroenteritis?

The main symptoms of viral gastroenteritis are sudden onset of vomiting and diarrhea. Vomiting is usually prominent but may be infrequent or absent. Diarrhea tends to be watery, short-lived and less severe than that which results from gastroenteritis caused by bacteria. Vomiting is more common in the young, and diarrhea in adults. The affected person may also have headache, fever (usually low-grade), chills and abdominal cramps ("stomach ache"). These symptoms can occur in various combinations during an outbreak. When viral gastroenteritis occurs in winter it is often referred to as "intestinal influenza" or "stomach flu", although it has no relationship to respiratory infections caused by the influenza virus.

Illness begins between one to two days following exposure to the virus. Unless complicated by underlying illness, age, or dehydration, the illness is generally mild and of short duration (one to two days), although some individuals may continue to feel weak for several days. 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.

How is viral gastroenteritis spread?

Norovirus is extremely contagious and is primarily spread when microscopic viral particles are transferred from contaminated hands to the mouth and ingested (fecal-oral). Millions of particles are present in the stool and vomitus and it takes only a small number to cause illness. Excretion of virus in the 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 after symptoms have subsided. Persons who have been exposed but do not develop symptoms may also transmit the virus. Vomiting will also disperse viral particles through the air, resulting in exposure of persons nearby and in contamination of environmental surfaces and objects. Norovirus can remain infectious on environmental surfaces for many days and is relatively resistant to common disinfecting products, heat, and cold.

In a healthcare facility the virus is spread primarily when ill persons (residents, healthcare workers, visitors) contaminate their hands with feces or vomitus containing the viral particles. It is impossible to be sure that hand hygiene eliminates the virus from the hands of symptomatic persons. Ill healthcare workers dispensing medication have been responsible for person-to-person transmission in some outbreaks.

Can viral gastroenteritis be spread by food and water?

Norovirus 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 common sources for outbreaks. Shellfish may be contaminated by sewage, but are unlikely to be served in LTCFs. Drinking water can also be contaminated due to faulty plumbing.

How is viral gastroenteritis diagnosed?

Viral gastroenteritis cannot be diagnosed by traditional stool cultures (for bacteria) or examination of stool for ova and parasites. Norovirus can be identified by polymerase chain reaction (PCR), which is available at CDHS and some local health departments. This requires fresh (unfrozen) stool. Ideally, stool samples should be obtained from at least 6 ill persons within 48-72 hours after the onset of symptoms. However PCR testing can detect viral particles for at least a week after the symptoms have resolved. Vomitus can be tested if that is the only specimen available. Antibody testing is possible but requires acute (collected during illness) and convalescent sera (typically collected about four weeks after onset of illness). While PCR can be completed within one day of receiving a specimen, decisions to institute control measures should not be delayed while waiting for results.

How can an outbreak of viral gastroenteritis be identified?

Facilities should establish and maintain a program of surveillance for viral gastrointestinal disease. An outbreak of viral gastroenteritis should be suspected when two or more residents and/or staff develop a new onset of vomiting and diarrhea within one to two days. Vomiting may be present in at least half of the ill persons. Other symptoms may include nausea with or without vomiting and low grade fever.

During the winter, and occasionally into the spring, many norovirus outbreaks may occur in LTCFs. Local health departments are encouraged to notify LTCFs if this is occurring in their jurisdiction. LTCFs that are aware of outbreaks in the community should be extremely vigilant of the development of acute viral gastrointestinal illness occurring in their facilities.

How is an outbreak of viral gastroenteritis controlled?

Interrupting person-to-person transmission will limit the extent of the outbreak if transmission prevention precautions are implemented when the first two to three cases are suspected. 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 may assist facility personnel in controlling an outbreak of viral gastroenteritis

I. Limit transmission when initial cases of viral gastroenteritis are suspected

A. Notification

1. Each nursing unit should immediately report any resident(s) or staff member(s) with a sudden onset of symptoms suggestive of viral gastroenteritis to the infection control practitioner or the Director of Nurses.
2. New cases should be recorded daily using a case log (see Appendix 1).
3. Notify the medical director immediately.

4. Notify the local health department and the Licensing and Certification district office with jurisdiction over your facility (www.dhs.ca.gov/lnc/org/default.htm). Consult with the local health department about laboratory testing.

B. Management of Residents and Staff

1. Confine symptomatic residents to their rooms until 48 hours after symptoms cease. Exclude non-essential staff from entering room.
2. Request symptomatic staff, visitors and volunteers to stay home until symptom-free for at least 24 hours.
3. Discontinue "floating" staff from the affected unit to non-affected units, if possible.

II. Institute control measures when a viral gastroenteritis outbreak is suspected without waiting for diagnostic confirmation

- #### A. Notification: see above. All outbreaks must be reported immediately to the local health department and the Licensing and Certification district office with jurisdiction over your facility.

B. Management of Residents

1. Minimize movement of residents. Asymptomatic, exposed 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.
2. Cancel or postpone group activities until at least 48 hours after the last identified case.
3. Clean and disinfect equipment such as blood pressure cuffs, stethoscopes and electronic thermometers before use for another resident.
4. Consider use of antiemetics for patients with vomiting.
5. Limit new admissions until the incidence of new cases has reached zero for at least 48 hours. 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.

C. Management of Staff

1. Staff assignments
 - a. Maintain the same staff to resident assignments, if possible.
 - b. Limit staff from moving between affected and unaffected units.
2. Implement Transmission Prevention Precautions:
 - a. Wear gloves, gown and a surgical or procedure mask when in contact with the symptomatic resident.

- b. Remove gloves and then gown, perform hand hygiene and then remove mask after contact with the ill resident and before contact with an unaffected resident in the same room or exiting the resident's room.
- c. Perform hand hygiene immediately after removal of gloves and gown.
 - i. If gloves or hands are visibly soiled with feces or vomitus, wash hands with soap and water.
 - ii. Alcohol hand gels may be used if gloves or hands have not been visibly soiled.
- d. After glove and gown removal and hand hygiene, ensure that hands and clothes do not touch potentially contaminated environmental surfaces or items in the resident's room, such as bed rails and tables.

D. Management of Ill Staff

3. The loss of a large number of staff may place a significant burden on those remaining at work but exclusion of the ill staff is still an important transmission control strategy.
4. A staff illness policy outlining the requirements for exclusion and the circumstances for returning to work should be developed and all employees should be educated about the policy.
5. A log should be maintained to record ill staff symptoms, the date when they became ill, and when they returned to work (see Appendix 1).
6. During an outbreak, staff should exclude themselves from resident care at the onset of symptoms including nausea, vomiting, abdominal pain and/or diarrhea.
7. Educate staff about the need to maintain strict hand hygiene and a clean environment to minimize the risk of household transmission of norovirus infection.
8. Staff should be allowed to return to work after being symptom free for at least 24 hours. Virus may be excreted in stool for 2 or more weeks. Testing for norovirus is not required before staff return to work. Because of continued excretion of virus, the need for good hand hygiene should be stressed to staff returning from illness.

E. Management of Environment

1. Clean and disinfect vomit and fecal spillages promptly.
2. Increase the frequency of routine environmental cleaning including bathrooms and the area surrounding the resident's living space. Particular attention should be given to cleaning objects that are frequently touched such as faucets, door handles, and bed rails.

3. Environmental services personnel should wear a gown, gloves and a surgical or procedure mask when cleaning surfaces soiled with vomitus or fecal material.
4. Use an Environmental Protection Agency (EPA)-approved disinfectant or a freshly prepared sodium hypochlorite solution (e.g., household chlorine bleach in a 1:100 {500 ppm} to 1:10 {5,000 ppm} dilution) to disinfect surfaces contaminated with feces or vomitus (see Appendix 2). The reliability of disinfectants other than those containing chlorine to kill norovirus is uncertain, even with EPA approval, so that the use of chlorine containing (hypochlorite) solutions is recommended for use whenever possible.
5. Clean carpets and soft furnishings with hot water and detergent or steam clean. Dry vacuuming is not recommended.

F. Management of Visitors

1. Visits to symptomatic residents should be discouraged.
2. If visitation is necessary, health care workers should instruct visitors on the appropriate procedure for putting on and removing gowns and gloves (and masks if resident is vomiting), and hand hygiene.

References

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http://www.cdc.gov/ncidod/dhqp/id_norovirusFS.html.

CDC. Norwalk-like viruses - Public Health Consequences and Outbreak Management.
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Appendix 2

Preparation of Chlorine Solutions

		Desired Chlorine Concentration		
		500 ppm (0.05%)	1,000 ppm (0.1%)	5,000 ppm (0.5%)
Dilution of standard (5.25%) bleach prepared fresh for use within 24 hours	Bleach/water	1:100	1:50	1:10
	Preparation	2 ½ tablespoons (1/6 cup) bleach in a gallon of water	5 tablespoons (1/3 cup) bleach in a gallon of water	25 tablespoons (1 2/3 cup) bleach in a gallon of water
Dilution of standard (5.25%) bleach prepared fresh and used for 1-30 days	Bleach/water	1:50	1:25	1:5
	Preparation	5 tablespoons (1/3 cup) bleach in a gallon of water	10 tablespoons (2/3 cup) bleach in a gallon of water	50 tablespoons (3 1/3 cup) bleach in a gallon of water

“Ultra” concentrations of bleach contain 6-7.35% hypochlorite and are not recommended to avoid producing higher than intended concentrations of chlorine.