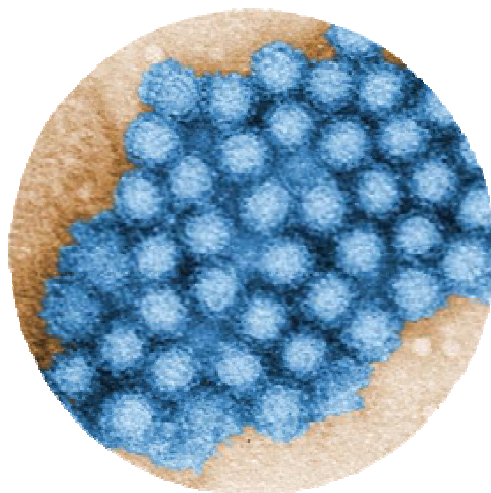


***RECOMMENDATIONS FOR THE PREVENTION AND
CONTROL OF VIRAL GASTROENTERITIS OUTBREAKS
IN WISCONSIN LONG-TERM CARE FACILITIES***



**Wisconsin Division of Public Health
Bureau of Communicable Disease
and Emergency Response
In Cooperation with the Bureau of Health and the Division of Quality Assurance**

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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 (2006-2007), Wisconsin had 113 reported non-foodborne outbreaks of viral gastroenteritis and 88 (78%) occurred in LTCFs. In these nursing homes 3705 residents were reported ill, 65 were hospitalized, and 6 residents died.

Norovirus outbreaks can be detected early by recognizing the typical symptoms of illness, and can be controlled by promptly implementing aggressive infection control measures to prevent the virus from being transmitted from person to person. When appropriate prevention and control measures are **not** implemented immediately, outbreaks can continue for weeks causing many illnesses, some hospitalizations and the occasional death from dehydration and other complications of vomiting and diarrhea.

The Wisconsin Division of Public Health (DPH), Bureau of Communicable Disease and Emergency Response (BCDER) developed these recommendations in cooperation with the Division of Quality Assurance (DQA). This information was developed to assist facility staff assigned to infection control with the development of a rational approach to the prevention and control of viral gastroenteritis outbreaks in LTCFs.

It is the responsibility of the LTCF to implement aggressive infection control measures quickly and to notify the appropriate agencies of the outbreak or suspected outbreak. Local Health Departments, the BCDER and DQA staff are available to provide guidance during the outbreak. Public health can approve laboratory testing of stool specimens free of charge in order to confirm the etiology of the outbreak. In return, LTCFs are expected to follow infection control standards of practice and to provide public health with copies of line lists (See Appendices 3, 4) detailing the extent of the outbreak among both residents and staff.

Frequently Asked Questions

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 is more common 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 during the 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, three or four months later, although the substantial strain variability of norovirus and the lack of cross-protective immunity, exposure to and infection with one strain does not seem to afford any protection from a different strain.

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). Norovirus can also spread via a droplet route from vomitus (CDC, 2006). 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 and the duration of shedding may last up to 4 weeks. 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 infected but do not develop symptoms may also shed the virus in their stool. Vomiting may also disperse viral particles through the air, resulting in exposure of persons nearby and in contamination of environmental surfaces and objects. Noroviruses are relatively stable in the environment and can survive on inanimate surfaces for up to a week or more and are relatively resistant to common disinfecting products, heat, and cold. Transmission can occur when individuals touch environmental surfaces or objects contaminated with these viruses and then touch their mouth (CDC, 2006).

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, however, the extent to which this occurs in LTCFs is unknown. Food preparers or handlers who have viral gastroenteritis may contaminate food, especially if they do not wash their hands thoroughly after using the bathroom or do not wear gloves while handling food. Cold foods such as salad and sandwiches have been implicated in many outbreaks. Contamination of drinking water with norovirus is typically associated with the breakdown of routine chlorination for municipal water supplies and sewage or other fecal contamination of well water sources.

How is viral gastroenteritis diagnosed?

Viral gastroenteritis cannot be diagnosed by traditional stool cultures (for bacteria) or by examination of stool for ova and parasites. Norovirus can be more reliably identified by reverse transcription-polymerase chain reaction (RT-PCR), which is available through the Wisconsin State Laboratory of Hygiene (WSLH), Milwaukee City Health Department Laboratory and some private laboratories.

The same Kit #10 (Cary Blair Transport Media), routinely used for enteric bacterial pathogens, can also be used for norovirus testing. Ideally, stool samples should be obtained from 4 to 6 ill persons within 48-72 hours after the onset of symptoms. However RT-PCR testing can often detect viral particles for up to a week after the symptoms have resolved. While PCR can be completed within one day of receiving a specimen, **decisions to institute aggressive infection control measures should not be delayed while waiting for results.** Decisions regarding testing for norovirus should be made after consultation with the facility medical director and your local health department.

How can an outbreak of viral gastroenteritis be identified?

Facilities are required to maintain an infection prevention and control program that includes a surveillance program for infections common to LTCFs including viral gastrointestinal disease. **An outbreak of viral gastroenteritis should be suspected when two or more residents and/or staff develop new onset of vomiting and/or 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, abdominal cramping, fatigue, body aches and occasionally a

low grade fever. **Facilities should immediately institute aggressive infection control measures anytime an outbreak is suspected.**

How is an outbreak of viral gastroenteritis controlled?

Despite all the control measures and precautions that a facility may have in place, there is usually little that can be done to prevent the initial introduction of the virus into the facility by an infected healthcare worker or visitor who may be shedding the virus even before they are ill. In addition, infected individuals may never be symptomatic, although immediate implementation of precautions for signs/symptoms of acute gastrointestinal illness may limit the extent of the outbreak. 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 resident unit should immediately report any resident(s) or staff member(s) with a sudden onset of symptoms suggestive of viral gastroenteritis to the person in-charge and infection control practitioner who should immediately take appropriate action. The medical director should be consulted anytime the facility suspects an outbreak.
2. New cases should be recorded daily using a line list (see Appendix 3 & 4).
3. Notify the local health department of any suspected or confirmed outbreak. Consult with the local health department about laboratory testing.
4. Notify “sister” facilities that may share staff/resources with the affected facility so they can put proper control measures in place and monitor for illness.

B. Management of Residents and Staff

1. Immediate isolation of the resident and restricting access to affected areas is essential.
2. Confine symptomatic residents to their rooms until 48 hours after symptoms cease. Symptomatic residents should be cohorted (e.g., residents with the same infection may share a room).
3. Exclude non-essential staff from entering room.
4. Require symptomatic staff, visitors and volunteers to stay home until they are symptom-free for at least 48 hours.
5. Discontinue “floating” staff from the affected unit to non-affected units, if possible.
6. Discontinue “floating” staff from affected units to food service.
7. Consider discontinuing use of common dining areas and instituting in-room dining.

8. If the outbreak continues, facility staff in consultation with their medical director should consider closing the unit/neighborhood or facility to new admissions as well as referring facilities such as other nursing homes or hospitals.
9. Suspend discharges/transfers to other facilities.

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

A. Notification: see above. All suspected/confirmed outbreaks must be reported immediately to the local health department.

B. Management of Residents

1. Minimize movement of residents. Asymptomatic, exposed residents should **not** be moved from an affected to an unaffected resident 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 for at least 48 hours after the last identified case.
3. Clean and disinfect all equipment including, but not limited to: blood pressure cuffs, stethoscopes, electronic thermometers and transfer lifts before using for another resident.
4. Consider dedicating commonly used equipment for use in affected areas.
5. Ensure health care providers managing a symptomatic resident's medical care are aware of their resident's illness to determine if any changes to medical management are warranted.
 - a. Consult with health care provider for residents experiencing vomiting and/or diarrhea who are also taking fluid depleting drugs and/or laxatives.
 - b. Consider use of anti-emetics for patients with vomiting.
6. For residents experiencing vomiting and/or diarrhea, monitor hydration status to include implementation of intake and output monitoring.
7. Limit new admissions until the incidence of new cases has reached zero for at least 48 hours. If new admissions are being considered, consult with the infection control practitioner and the facility medical advisor first. Consider admitting resident(s) to an unaffected unit or to a unit that has no new cases for 48 hours.
8. If any resident, regardless of symptoms, is transferred to a hospital or other facility, notify the facility (and EMS or private ambulance service if used) that the resident is coming from a facility at which an outbreak of viral gastroenteritis is occurring.
9. Eliminate the storage and sharing of resident's personal food supplies for the duration of the outbreak.

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.
 - c. Discontinue “floating” staff from affected units and other facilities to food service.
 - d. Provide education and DPH Disease Fact Sheets on viral gastroenteritis to all staff. Include symptoms, transmission prevention precautions, and work exclusion guidelines.

2. Implement “contact precautions”:
 - a. Wear personal protective equipment to include gloves, and gown (mask and goggles or face shield if vomitus present) upon entry to the room and when in contact with the symptomatic resident (CDC, 2004).
 - b. Remove gloves, goggles or face shield, gown, mask, and then perform hand hygiene immediately after removing all personal protective equipment and before contact with an unaffected resident in the same room or when exiting the resident’s room (CDC, 2004).
 - 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.** Given the variability in reported effectiveness of alcohol-based hand sanitizers in inactivating various norovirus strains, the CDC generally recommends washing with soap and water as the preferred method of hand hygiene. Use of alcohol hand gels after washing with soap and water or in a situation when such facilities are not available, may be helpful in outbreak settings.
 - c. 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, light switches, door knobs and tables.

D. Management of Ill Staff

1. A staff illness policy outlining the duty to inform requirements for exclusion and the circumstances for returning to work (48 hours) should be developed and implemented and all employees should be educated about the policy. Consider developing a sick leave policy that provides compensation or other non-punitive approaches to encourage self-reporting of ill staff and appropriate exclusion.
2. During an outbreak, staff should exclude themselves from resident care and/or food service duties at the onset of symptoms including nausea, vomiting, abdominal pain and/or diarrhea. Such exclusions shall remain in effect until the

employee is asymptomatic and free of symptoms for 48 hours. Testing for norovirus is not required before staff return to work.

- a. Virus may be excreted in stool for 2 or more weeks. Because of continued excretion of virus, the need for meticulous hand hygiene should be stressed to staff returning from illness.
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 essential transmission control strategy.
4. Educate staff about the need to maintain strict hand hygiene and a clean environment to minimize the risk of household transmission of norovirus infection. Facility management staff should conduct surveillance rounds to ensure staff are complying with appropriate infection control measures.
5. A log should be maintained to record ill staff symptoms, date when they became ill, date they became well, and when they returned to work (See appendix 4).
6. During the outbreak, in order to avoid transmission to food service personnel, staff from the affected unit should deliver food items to the affected area. Food service personnel should consult with infection control personnel before resuming routine food service delivery to the affected unit. Carts used for food or drug distribution should be continually disinfected immediately before and after usage since they are handled by more than just food staff, including CNAs or LPNs.
7. Educate food service personnel about the need to adhere to strict hand washing regimens and cleanliness of the kitchen area and food service equipment used outside the kitchen area (e.g., tray containers). Any food service employee experiencing symptoms of acute gastrointestinal illness resembling norovirus shall be excluded from working until 48 hours after symptoms end.

E. Management of Environment

1. 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, light switches and bed rails.
2. Clean and disinfect vomit and fecal spills promptly. All individuals cleaning surfaces soiled with vomitus or fecal material should wear a gown, gloves, and a surgical or procedure mask. 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. Exposed food items such as candy, fruit, cups or glasses with straws should be discarded.
3. CDC recommends that chlorine bleach should be applied to hard, non-porous, environmental surfaces at a minimum concentration of 1000 ppm. This concentration has been demonstrated in the laboratory to be effective against

surrogate viruses with properties similar to those of norovirus. Healthcare facility staff should use appropriate PPE (e.g. gloves and goggles) when working with bleach. In areas with high levels of soiling and resistant surfaces, up to 5000 ppm chlorine bleach may be used. (See Appendix 1, page 11). The reliability of disinfectants other than those containing chlorine to kill norovirus is uncertain, although recent studies by the Nebraska Cooperative Extension and the USDA have shown that certain oxidizing agents registered by the U.S. EPA (e.g., Virkon), are effective virucidal agents. The effectiveness of other EPA-approved disinfectants or norovirus clean-up is uncertain.

4. Norovirus may remain viable for up to 12 days in carpeting or other environmental surfaces. Therefore, a thorough cleaning of carpets, curtains, walls, and all equipment is essential. Steam cleaning should be used for all carpeting and soft furnishings. Dry vacuuming has the potential to re-circulate the viruses and is not recommended.
5. Enhanced cleaning and disinfection should continue for at least 72 hours after the last documented case.

F. Laundry Concerns

1. Do not shake soiled linens and laundry. Aerosols created may pose a risk for transmission. Soiled linens should be placed directly into a bag at the point of removal. Minimize the number of staff handling this material.
2. Contaminated pillows should be laundered as infected linen unless they are covered with an impermeable cover, in which case they should be disinfected with a hypochlorite solution (See Appendix 1).
3. Ensure proper segregation of clean and soiled laundry.
4. Ensure laundry personnel are made aware of the potentially infected linen and are provided with appropriate PPE.

G. Management of Visitors

1. Post signage that the facility is experiencing an increase in gastrointestinal illness.
2. Visits to symptomatic residents should be discouraged, especially by children, the elderly and persons with underlying medical conditions.
3. If visitation is necessary, health care workers should instruct visitors on the appropriate procedure for putting on and removing gowns, gloves and masks (if the resident is vomiting) and hand hygiene, and provide education and DPH Norovirus Disease Fact Sheets.

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Appendix 1

Disinfection and Preparation of Chlorine Solutions

A. Examples of items to disinfect:

Doorknobs, faucets, sinks, toilets, commodes, bath rails, phones, counters, chairs, bottles, hand rails, food and drug delivery carts, elevator buttons, light switches, mattress covers, aprons, uniforms, bedding and computer keyboards.

B. What works best: Chlorine bleach and Virkon

C. Chlorine bleach concentrations and mixing instructions:

1000 ppm

- Use for non-porous surfaces, tile floors, counter-tops, sinks, toilets
- 1/3 cup bleach in 1-gallon of water (1:50 dilution).

5000 ppm

- Use for porous surfaces, wooden floors
- 1 2/3 cup bleach in 1-gallon water (1:10 dilution)

Ineffective disinfectants: Quaternary compounds, ethanol anionic compounds.

The following page is an example of signage that your facility may wish to use during a suspected gastrointestinal outbreak.

Because we are currently experiencing an increase in the number of residents with gastrointestinal illness in our facility, we ask that you please check in at the front desk before visiting with your family member or friend.

-- Thank you for your cooperation

Facility: _____

Unit: _____

Appendix 3. Sample Case Log (Line list) of Residents during outbreaks of gastrointestinal illness.

No.	Name	Age	Sex	Building or Unit	Room	Onset	N	V	D	AC	Fe	Ch	Well day / Died	Hosp.	Lab Results

Onset=Onset of Illness; N=Nausea, V=Vomiting, D=Diarrhea; AC=Abdominal Cramping; Fe=Fever; Ch=Chills; Hosp=Hospitalization

Facility: _____

Unit: _____

Appendix 4. Sample Case Log (Line list) of Staff during outbreaks of gastrointestinal illness.

No.	Name	Age	Sex	Assignment	Onset	Well	N	V	D	AC	Fe	Ch	Ret - Wk	Hosp.	Lab Results

Onset=Onset of Illness; Well=Well Day; N=Nausea, V=Vomiting, D=Diarrhea; AC=Abdominal Cramping; Fe=Fever; Ch=Chills; Rt-Wk=Return to Work date; Hosp=Hospitalization