

Norovirus Outbreaks in Healthcare Facilities – Interim Report #2

Current Situation

On March 4, 2010, the Southern Nevada Health District (SNHD), Office of Epidemiology, reported the identification of clusters of gastrointestinal (GI) illness in five residential healthcare facilities in the Las Vegas area. Since the initial report, clusters have been identified at four additional residential healthcare facilities. As of this report, four GI illness clusters have been laboratory-confirmed as outbreaks of norovirus. The Southern Nevada Health District and the Nevada State Health Division’s Bureau of Health Care Quality and Compliance (BHCQC) have been collaborating on the investigation and response to this outbreak.

On February 16, 2010, SNHD received the first of nine reports of gastroenteritis clusters at healthcare facilities in Clark County. A subsequent report was received on February 26, followed by one report on March 1, two on March 2, one on March 5, one on March 8 and two on March 11. As of March 12, 281 cases of gastroenteritis (including 61 staff illnesses) were reported within these nine facilities; the outbreak curve is presented in figure 1. Twelve patients from residential healthcare facilities have been admitted to acute care hospitals for treatment for their GI illness. Based on symptoms and duration of illness, the clusters are suspect for norovirus. Specimens collected from patients at four

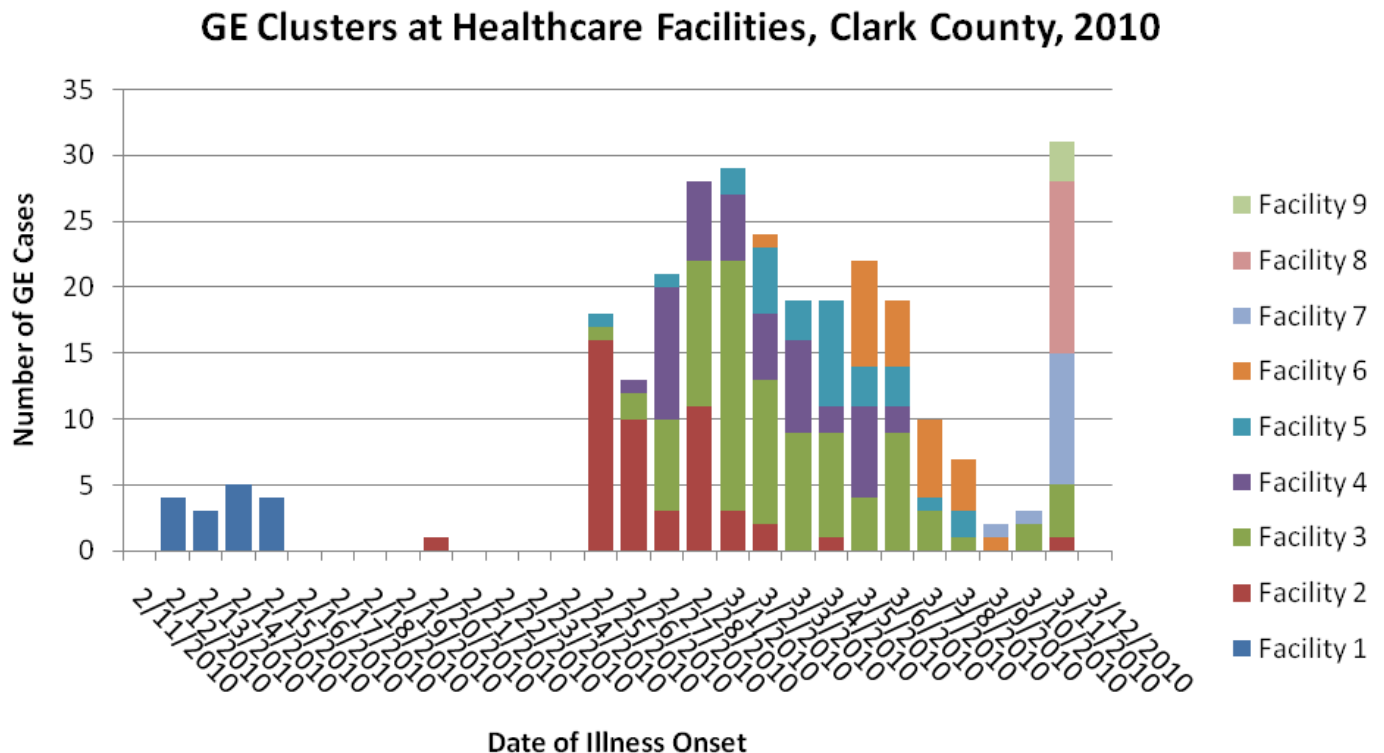
facilities were positive for norovirus. The outbreak is ongoing as of this report in six of the nine facilities. BHCQC staff have made on site visits to all of the affected facilities. All facilities involved were strongly recommended to institute infection control measures provided in the *SNHD Guidelines for the Prevention and Control of Norovirus in Extended Care Facilities and Nursing Homes* (attached).

The ongoing investigation has revealed evidence of transmission of norovirus between some healthcare facilities. In some instances, symptomatic staff have worked at more than one of the affected facilities. Additionally, some patients have been transferred between facilities while infectious, potentially resulting in transmission to staff and/or patients in the receiving facility. Since there is no preventative medical treatment, the importance of appropriate hand hygiene, isolation of ill persons, and environmental disinfection cannot be overemphasized when dealing with norovirus outbreaks.

OOE staff suspect that norovirus has now begun to spread in the community. There have been two small clusters of GI illness recently identified in elementary schools in Clark County. Symptoms are consistent with norovirus. No other reports of GI clusters have been received as of the date of this bulletin.

continued

Figure 1. Outbreak curve, healthcare facility norovirus outbreak, February-March 2010 (n=281)



Clinical Presentation

Norovirus infection usually presents as acute-onset vomiting, watery non-bloody diarrhea with abdominal cramps, and nausea. Low-grade fever also occasionally occurs, and vomiting is more common in children. Dehydration is the most common complication, especially among the young and elderly. The incubation period for norovirus-associated gastroenteritis is typically between 24 and 48 hours (median in outbreaks 33 to 36 hours), but cases can occur within 12 hours of exposure. Symptoms usually last 24 to 60 hours, recovery is usually complete, and there is no evidence of any serious long-term sequelae. Asymptomatic infection may occur in as many as 30% of infections, although the role of asymptomatic infection in norovirus transmission is not well understood.

Transmission

Norovirus infections are usually transmitted through the fecal-oral route, either through the consumption of contaminated food or water, direct person-to-person contact, or contact with contaminated fomites. In addition to feces, vomitus from an infected person is highly infectious. Noroviruses are relatively stable in the environment, and may persist for up to a month on hard surfaces. The infectious dose for norovirus is as low as ten viral particles, making the virus highly contagious; secondary spread is often identified among household and close contacts of patients. Although presymptomatic viral shedding may occur, shedding usually begins with onset of symptoms and may continue for 2 weeks after recovery. It is unclear to what extent viral shedding over 72 hours after recovery signifies continued infectivity.

Diagnosis

The diagnosis of norovirus is typically made based on the clinical presentation, the absence of other identified pathogens, and the local epidemiology of the disease. In the absence of identified exposures, the clinical signs and symptoms of illness are not sufficiently characteristic for diagnostic purposes. Although PCR testing for norovirus is available from some commercial laboratories, testing is generally not indicated as the patient typically recovers quickly and there are no specific interventions or treatments for norovirus infection. If you do choose to test, note that the laboratory testing for norovirus is not included in standard stool culture and must be requested separately. Check with the laboratory for instructions on specimen collection for norovirus testing, as these may be different than the instructions for stool culture specimen collection.

Clinical Management

There is no specific treatment for norovirus infection, and clinical management is supportive. Most patients do not seek medical care and oral fluid replacement is sufficient to replace lost fluids. The most serious problem identified in persons seeking medical care is dehydration, which may require intravenous fluids. Dehydration is most frequently identified among the very young, the elderly, and persons with other underlying illnesses.

Infection Control

Patients with suspected norovirus infection should be managed with standard precautions with careful attention to hand hygiene

practices. However, contact precautions should be used when caring for diapered or incontinent persons, during outbreaks in a facility, and when there is the possibility of splashes that might lead to contamination of clothing. Persons cleaning areas heavily contaminated with vomitus or feces should wear surgical masks as well. Ill staff members should be kept out of work until no longer infectious, 72 hours after the cessation of symptoms.

Environmental Decontamination

In order to protect staff, emetic or fecal accidents should be treated as highly infectious, and should be immediately cleaned and then sanitized with products labeled as EPA-registered as effective against Feline Calicivirus (FCV), the laboratory surrogate for norovirus. EPA-approved disinfectants should be used according to manufacturers' instructions. A list of known approved products can be found in Appendix A of the health district's "Guidelines for the Prevention and Control of Norovirus in Hotel/Casinos" available at <http://southernnevadahealthdistrict.org/download/epi/norovirus-recommendations.pdf>. In addition, the Southern Nevada Health District's *Guidelines for the Prevention and Control of Norovirus in Extended Care Facilities and Nursing Homes* has been provided as part of this bulletin.

Reporting

Reports of individuals with norovirus infections are not reportable. However, illness clusters (e.g. schools, hotels, medical facilities) are reportable under Nevada Administrative Code sections 441A.525 and the Southern Nevada Health District Regulations Governing the Reporting of Diseases, Exposures, and Sentinel Health Events section 4.9. Reports should be made to the Southern Nevada Health District Office of Epidemiology at (702) 759-1300, option 2, and can be made 24 hours a day, seven days a week.

References

Southern Nevada Health District. Guidelines for the prevention and control of norovirus in hotel/casinos. <http://southernnevadahealthdistrict.org/download/epi/norovirus-recommendations.pdf>

Southern Nevada Health District. Health Topics: Norovirus. <http://southernnevadahealthdistrict.org/health-topics/norovirus.php>

CDC. Norovirus in Healthcare Facilities Fact Sheet. http://www.cdc.gov/ncidod/dhqp/id_norovirusfs.html

CDC. Norovirus Q&A. <http://www.cdc.gov/ncidod/dvrd/revb/gastro/norovirus-qa.htm>

Treavor JJ, Dolin R. Norovirus and Other Caliciviruses. Chapter in Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases, 6th edition. Elsevier, inc. 2000. Pp. 2194-2201

CONTROL MEASURES FOR RESIDENTS:

- ◆ Limit new admissions until the outbreak is over. An outbreak is generally considered to be over when a sufficient amount of time has passed without onset of illness in new cases. This determination will be made by the health authority.
- ◆ Confine residents with vomiting or diarrhea to their rooms until symptom-free for 72 hours or more.
- ◆ Cancel group activities until the outbreak is over.
- ◆ Do not transfer residents (symptomatic or not) from outbreak-affected to unaffected wards, unless it's medically urgent to do so, until the outbreak is over.
- ◆ Ask family members and visitors with vomiting and/or diarrhea to stay home until symptom-free for 72 hours or more.
- ◆ Do not allow children to enter the facility until the outbreak is over.
- ◆ 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, clean and disinfect the equipment before another resident uses it.
- ◆ Consider giving anti-emetics to patients with vomiting.

CONTROL MEASURES FOR STAFF AND VOLUNTEERS:

- ◆ Maintain the same staff to resident assignments.
- ◆ Discontinue "floating" staff from the outbreak-affected to unaffected wards.
- ◆ Furlough staff and volunteers with vomiting or diarrhea involved in viral gastroenteritis outbreaks for 72 hours after symptoms cease. Work restrictions during bacterial gastroenteritis outbreaks depend on the bacterium.
- ◆ Exclude non-essential personnel from outbreak-affected wards.
- ◆ Wear gloves and gowns when entering the rooms of residents with gastroenteritis.
- ◆ Remove gloves and gowns after contact with an affected resident and before contact with an unaffected resident in the same room. Remove gloves before leaving the room and wash hands immediately.
- ◆ Clean up fecal and vomit accidents promptly. Disinfect with an effective virucide¹ or 1000 ppm available chlorine bleach** solution (1 part bleach to 50 parts water).
- ◆ Increase the frequency of routine ward cleaning, with special attention to frequently handled things like light switches, telephones, faucets, door handles, toilet flushers & bath rails.

CLEANING UP VOMIT AND FECES

Staff who clean up vomit or feces should use the following precautions to reduce their risk of infection.

GENERAL PRINCIPLES:

- ◆ wear disposable gloves and gowns*
- ◆ clean soiled areas with detergent and hot water
- ◆ always clean with paper towels or disposable cloths and dispose in infectious waste bags
- ◆ disinfect hard non-porous environmental surfaces with 1000 ppm bleach** solution (1:50 bleach to water). In areas with high levels of soiling and resistant surfaces, up to 5000 ppm chlorine bleach** (1:10 bleach to water) may be used **or** use one of the effective virucides¹ listed below according to manufacturers directions
- ◆ dispose of gloves, gown and cloths in infectious waste bags
- ◆ wash hands thoroughly using soap and water and dry them just as thoroughly

Handwashing is the single most important procedure for preventing the spread of infection between you, your coworkers and your clients. Frequent handwashing with soap and water for at least 20 seconds of vigorous rubbing, thorough rinsing under a stream of clean water, and drying with disposable towels is recommended. Faucets should be turned off with paper towels.

SPECIFIC SITUATIONS:

Cleaning specific items*

Bed linens, bed curtains, & pillows: launder in detergent and hot water in soluble alginate laundry bags; use 1000 ppm chlorine bleach** solution to disinfect pillows with impermeable covers or use an effective virucide¹. Soiled linens should be handled as little as possible and with minimal agitation.

Carpets: use paper towels to soak up excess liquid and transfer these and any solid matter directly into a healthcare risk waste bag; clean with detergent and hot water using a disposable cloth then disinfect with an effective virucide¹ or; disinfect with 1000 ppm chlorine bleach** solution. Carpet may be steam cleaned after disinfection.

Hard surfaces: clean with detergent and hot water; disinfect with an effective virucide¹ or 1000 ppm chlorine bleach** solution; launder non-disposable mop heads in a hot wash. In areas with high levels of soiling and resistant surfaces, up to 5000 ppm chlorine bleach** (1:10 bleach to water) may be used

Horizontal surfaces, furniture and soft furnishings (in the vicinity of the soiled area): clean with detergent and hot water then disinfect with an effective virucide¹ or with 1000 ppm chlorine bleach** solution.

Fixtures and fittings in toilet areas areas: clean with detergent and hot water; disinfect with 1000 ppm chlorine bleach** solution or an effective virucide¹.

Cleaning up vomit in the kitchen*

Carefully remove all vomit and clean the area using the general principles above.

Food preparation area (including vertical surfaces): disinfect all kitchen surfaces with 1000 ppm chlorine bleach** solution or an effective virucide approved for food contact surfaces¹. Thoroughly rinse all areas and sanitize using routine kitchen sanitizer according to manufacturer's recommendations.

Food: destroy any exposed food, food that may have been contaminated and food that was handled by an infected person.

Work restrictions: furlough anyone with vomiting and diarrhea who works in the kitchen until 72 hours after the symptoms stop.

Report any incident of vomiting to the infection control team and appropriate managers.

****It is recommended that persons who clean areas substantially contaminated by feces and/or vomitus wear masks because spattering or aerosols of infectious material might be involved in disease transmission.***

***** Use chlorine bleach that is registered by the EPA as a disinfectant.***

¹ Effective virucides are those effective against feline calicivirus (FCV). A complete list of EPA-registered effective products can be found at http://www.epa.gov/oppad001/list_g_norovirus.pdf

References:

Oregon Department of Human Services, Office of Disease Prevention & Epidemiology. "Investigating gastroenteritis outbreaks in nursing homes and similar settings."

Centers for Disease Control and Prevention. "Norwalk-like viruses:" public health consequences and outbreak management. MMWR 2001; 50(No. RR-9).

Centers for Disease Control and Prevention, "Norovirus in Healthcare Facilities Fact Sheet", December 21, 2006. Available at: http://www.cdc.gov/ncidod/dhqp/id_norovirusFS.html

Washoe County Health Department, Alert, Volume 24, Alert 1, February 4, 2003.