Outbreaks and Clusters Associated with Norovirus in Several Group Settings in Clark County, Nevada, 2014

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Current Situation

Since March 29, 2014, the Southern Nevada Health District (SNHD), Office of Epidemiology, has identified 7 clusters and outbreaks of acute gastroenteritis illness in the Las Vegas area. Venues associated with these clusters and outbreaks include a hotel conference, several private gatherings, and long–term and memory-care facilities. Seventeen persons reported seeking medical care and 2 persons were hospitalized in association with the hotel conference.

Testing by the Southern Nevada Public Health Laboratory (SNPHL) confirmed NoV in multiple stool specimens obtained from ill persons.

SNHD, SNPHL, and the Nevada Division of Public and Behavioral Health (NDPBH), Office of Public Health Informatics and Epidemiology collaborated on the investigation and response to these outbreaks.

Clinical Presentation

NoV infection is usually a self-limited disease with clinical symptoms that include nausea, vomiting, non-bloody diarrhea, abdominal pain, myalgia, headaches, malaise, and low-grade fever. It is estimated that 32% of infected individuals may be asymptomatic. Symptoms can often occur with little or no prodrome and characteristically last 24 to 72 hours in healthy persons. However, prolonged illness lasting 4-6 days can occur, particularly among young children or hospitalized patients. NoV-associated infections in the elderly, who often have underlying medical conditions, can be severe, sometimes resulting in hospitalization or death.

Transmission

Transmission of NoV can occur through three general routes: person-to-person, foodborne, or waterborne transmission. Person-to-person transmission might occur through the fecal-oral route, through ingesting particles of vomitus that have been aerosolized, or through contact with contaminated environmental surfaces by hands that subsequently touch the mouth. Foodborne transmission typically occurs by contamination from infected food handlers during preparation and service, but foods can become contaminated with NoV at any point during production, processing, distribution, and preparation. Shellfish (particularly oysters) from contaminated beds, raw fruits and vegetables, contaminated milk or milk products have served as vehicles for NoV spread. Recreational and drinking water can serve as vehicles for NoV transmission and result in large community outbreaks.

The incubation period is usually 24-48 hours (range 10-50 hours). The period of communicability is greatest while symptoms are most severe, however the length of time an infected person is contagious after symptoms resolve is considered to be 48 to 72 hours. The low inoculum (as few as 18 viral particles) required for transmission and the prolonged shedding period (an average of four weeks following infection) make the spread of NoV infections difficult to control.

Diagnosis

Many public health and clinical laboratories perform real-time reverse transcription-polymerase chain reaction (RT-PCR) assays for NoV detection. Enzyme immunoassay (EIA) might be useful for preliminary screening of multiple fecal samples associated with an outbreak of acute gastroenteritis. Because of their poor sensitivity, negative EIA results should be confirmed by RT-PCR reference methods. For this reason, EIAs are not recommended for clinical diagnosis of NoV infection in sporadic cases of gastroenteritis.

Whole stool specimens for laboratory diagnosis of NoV should be obtained during the acute phase of illness (i.e., within 48–72 hours after onset), while stool is still liquid or semisolid and viral excretion is at its peak. Specimens collected later in illness or after resolution (i.e., up to 7–10 days after onset) might still provide a diagnosis and an opportunity to confirm NoV infection.

Lab Testing
Lab should be contacted for specific specimen collection and transport procedures.

Laboratory Name	Test Code
ARUP	
Norovirus Group 1 and 2 by PCR	51281
Clinical Pathology Laboratories (CPL)	
Norovirus, stool, EIA	4078
LabCorp	
Norovirus Detection, Real Time PCR	138307
Quest	
Norovirus RNA, RT-PCR	19098
Norovirus, EIA, stool	181106

Clinical Management
There is currently no vaccine that will prevent NoV infections. Treatment for NoV mainly involves supportive care. Oral rehydration therapy is effective and is the most common treatment for NoV infection. Intravenous fluids and hospitalization might be needed if the person cannot maintain an adequate oral intake of fluids.

Infection Control
Strict hand hygiene is the most important method to prevent NoV infection and control transmission. Proper hand washing with soap and running water for at least 20 seconds is the most effective way to reduce NoV contamination of the hands. Hand sanitizers might serve as an adjunct in between proper hand washings, but should not be considered a substitute for frequent soap and water hand washing.

In long-term care facilities (LTCF), isolation or cohorting of symptomatic persons and staff are often the most practical means of interrupting transmission of virus and limiting contamination of the environment. Isolation of both exposed and unexposed well persons might be useful during outbreaks. Ill patients should not be transferred to unaffected units in the facility or to other facilities except in the case of medical necessity and after consultation with infection-control staff. If possible, affected units within a facility (or the whole facility during an outbreak) should be closed to new admissions to prevent the exposure of new patients to NoV.

Ill staff members should be excluded from work during their illnesses until for 48–72 hours following resolution of symptoms. Food-service workers who test positive for NoV must be excluded or restricted from work per the FDA Food Code, and should either receive permission from the SNHD or from the NDPBH Bureau of Health Care Quality and Compliance to return to work. Staff members should also be cautioned about how NoV is transmitted and be made aware of the heightened importance of hand hygiene through washing with soap and water.

The efficacy of sodium hypochlorite (chlorine bleach) has been widely documented to disinfect human NoV from environmental surfaces. When possible, chlorine bleach solution should be applied to hard, nonporous, environmental surfaces at a concentration of 1,000–5,000 ppm (5–25 tablespoons household bleach [5.25%] per gallon of water) and leave in place for at least 4 minutes. A list of EPA-approved commercial cleaning products that are effective against feline caliciviruses (which include NoV) is available at http://www.epa.gov/oppad001/list_g_NoV.pdf. Personnel performing environmental services should adhere to the manufacturer's instructions for dilution, application, and contact time.

Additional infection control measures for healthcare and LTCFs are included in the SNHD Guidelines for the Prevention and Control of NoV in Extended Care Facilities and Nursing Homes available online at http://www.southernnevadahealthdistrict.org/health-care-providers/norovirus-guidelines.php

Reporting
Individual cases of NoV are not nationally notifiable; however, all outbreaks of acute gastroenteritis must be reported per the Nevada Administrative Code 441A, which specifies that illnesses that are related to known or suspected outbreaks must be reported to the SNHD Office of Epidemiology at (702) 759-1300, option 2. This number is available 24-hours a day, seven days a week. Please contact the Office of Epidemiology if you would like additional information or have questions about reporting.

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