



Department of Health and Social Services
Jay Livey, Commissioner

Division of Public Health
Karen Pearson, Director

Section of Epidemiology
John Middaugh, MD, Editor

3601 C Street, Suite 540, P.O. Box 240249, Anchorage, Alaska 99524-0249 (907) 269-8000
24-Hour Emergency Number 1-800-478-0084

<http://www.epi.hss.state.ak.us>

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Norwalk-like Viral Illness Hits Alaska Travelers Early

Every summer, the Section of Epidemiology receives reports of gastroenteritis outbreaks affecting travelers to Alaska. Although numerous pathogens can cause these outbreaks, including bacterial, parasitic, and viral agents, Norwalk-like viruses (NLV) are most frequently implicated.

Outbreak

On May 26, 2002, a medical epidemiologist with the Centers for Disease Control and Prevention (CDC) Vessel Sanitation Program reported an outbreak of gastroenteritis among the passengers and crew members aboard a cruise ship that traveled to Alaska. Passengers embarked from Vancouver, British Columbia in mid-May and arrived in Seward 7 days later. During this cruise, 40 passengers and 12 crew members (just under 3% of all people on board) were evaluated at the ship's infirmary with complaints of diarrhea with or without vomiting. The cruise ship immediately began a southbound journey, leaving from Seward and arriving in Vancouver in early June. During this southbound voyage, 88 passengers and 39 crew members became ill with similar gastrointestinal symptoms.

Investigation by the CDC Vessel Sanitation Program and Health Canada implicated a Norwalk-like virus (NLV) as the etiologic agent for this outbreak. The cruise line subsequently implemented aggressive sanitation measures to interrupt the spread of disease.

Discussion

National estimates are that 65% of all nonbacterial gastroenteritis in the United States is due to Norwalk-like viruses (NLV). NLV are small RNA viruses classified as caliciviruses. Gastroenteritis due to NLV has an average incubation period of 24-48 hours (range 18-72 hours), and symptoms can last 12-72 hours. Symptoms include acute onset of abdominal cramps, nausea, vomiting, and diarrhea. Constitutional symptoms of headache, fever (101°F to 102°F), chills, and myalgia are frequently reported. Diarrhea can occur four to eight times within 24 hours, and stools are described as loose to watery, without blood, mucus, or fecal leukocytes. Severe dehydration can occur. Long-term sequelae of NLV infection have not been reported.

Norwalk-like virus is acquired through ingestion of viral particles. The infectious dose of NLV is <100 viral particles, and the virus is effectively transmitted by contact with contaminated objects such as handrails. NLVs are able to survive in chlorinated water and temperatures from 32°F to 145°F. Viral shedding in stool can persist for up to 2 weeks after resolution of symptoms. NLVs cannot be cultured and is identified by polymerase chain reaction (PCR) techniques on bulk stool samples or vomitus.

Norwalk-like viral disease usually resolves without specific treatment; however, some patients may require fluid replacement and symptomatic treatment for headache, myalgia, and nausea. The administration of bismuth subsalicylate has no effect on the number or character of stools or on virus shedding. No vaccines exist for NLV.

Table 1. Characteristics of Norwalk-like viruses

Characteristic	Observation	Comments
Low infectious dose	< 100 viral particles	Transmission: -droplet (vomit), -person-to-person, -contaminated food or water
Short incubation	18-36 hours	
Short symptom duration	Abdominal cramps, nausea, vomiting, diarrhea, headache, fever, chills, myalgias	Dehydration may occur No long-term sequelae
Environmentally stable	Survives <10 ppm chlorine, freezing, and heating to 145°F	Difficult to eliminate from contaminated water
No long-term immunity	Disease can occur with reinfection	No vaccine

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Recommendations

1. Collect bulk stool or vomitus specimens from ill tourists or tour company employees in a clean, leak-proof container. If other stool pathogens are considered, collect stool in Cary-Blair media for enteric bacteria, and ova and parasite collection kits for giardia and other parasites. Refrigerate all specimens but do not freeze. Contact Epidemiology at 907-269-8000 during business hours or 1-800-478-0084 after hours to arrange for specimens shipment.
2. Notify the Alaska Section of Epidemiology as soon as possible whenever an unusual number of tourists or tourism industry employees are ill with vomiting or diarrhea. Call (907)269-8000 during business hours or 1-800-478-0084 after hours.
3. Provide motion sickness bags and waterless handwashing materials for each passenger traveling by bus, rail, or ship.
4. Train tourism industry employees about cleaning procedures for vomitus and diarrhea. Provide adequate sanitation materials (bleach, disposable wipes, gloves, plastic bags) for immediate cleanup. Brochures and information about procedures for cleaning vomitus or diarrhea are available from the Alaska Division of Environmental Health at: <http://www.state.ak.us/dec/deh/sanitat/homesan.htm>.
5. Review food handling and hand washing procedures with all tourism industry staff, especially food handlers and housekeeping staff. Ill staff should not prepare or serve food until free of gastrointestinal symptoms for at least 48 hours.

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