

2.11 Norovirus Infection

Etiology

Noroviruses, also known as Norwalk-like viruses, SRSV (small round structured viruses, are part of a group of viruses from the family *Caliciviridae* that are the most common cause of stomach upset (gastroenteritis).

Case Definitions

Confirmed Outbreak

Two or more cases of clinical illness⁸ compatible with norovirus that can be epidemiologically linked to one another (i.e. associated by exposure with onsets within a 1-3 day period), at least one of which is laboratory-confirmed:

- Community outbreak:
Two or more unrelated* cases of illness compatible with norovirus that can be epidemiologically linked to one another
* Do not live in a same household, excluding institutions
- Institutional outbreak:
Two or more unrelated⁹ cases of illness compatible with norovirus that can be epidemiologically linked to one another

Clinical Presentations

Noroviruses also known as Norwalk-like viruses (NLV) are a common cause of outbreaks of viral gastroenteritis. Norovirus gastroenteritis has several distinguishing characteristics which include a rapid onset of the following symptoms; diarrhea, vomiting which is often projectile, a short duration of illness (one to three days) and a short incubation period. The illness is generally mild, but it can cause severe disease with associated dehydration and electrolyte imbalance that might require hospitalization and aggressive treatment with intravenous fluids. Relapse is uncommon, but recognized, and mortality rates are low, even in hospital outbreaks.

Diagnosis

Collection of stool sample from the first 10 patients for viral studies and the first three patients for bacteriologic analysis is recommended. Once norovirus has been identified in an outbreak, further fecal specimens are not required.

⁸ Clinical illness is characterized by acute onset of nausea, vomiting, diarrhea, abdominal pain, myalgia, headache, malaise, low grade fever or a combination of these symptoms, lasting 24 to 48 hours.

⁹ Do not live in a common household, excluding institutions

Other diagnostic tools may be used in consultation with the Public Health Lab, 777-6583 or website www.publichealthlab.ca.

Epidemiology

Occurrence

Noroviruses have a worldwide distribution with multiple antigenic types circulating simultaneously in the same region. Outbreaks have been detected in all age groups and tend to occur in closed populations, such as hospital units, child care centers and on cruise ships. The attack rate is around 50% and the infective dose is as small as one to ten virus particles. There have been 71 cases reported in 2015 in Newfoundland and Labrador.

Reservoir

Humans are the natural reservoir for noroviruses and are the source of infection.

Transmission

Transmission is facilitated through person to person spread by the fecal-oral route but there may be aerosolisation of vomitus, which typically contains abundant infectious virus particles.

Common-source outbreaks have been described after ingestion of ice, shellfish, salads, and cookies, usually contaminated by infected food handlers. Exposure to contaminated surfaces has also been implicated in some outbreaks.

Incubation Period

The incubation period is usually twenty four (24) – forty eight (48) hours.

Communicability

Excretion lasts five (5) – seven (7) days after the onset of symptoms in 50% of infected people and can be prolonged in immunocompromised hosts.

Control Measures

Management of Case

Investigations

- Obtain a food history,
 - identify recent ingestion of potentially contaminated food (especially poultry, beef, pork) or water, or unpasteurized milk and the time of consumption.
- Determine the possible source of infection taking into consideration the incubation period, reservoir, and mode of transmission.
- Assessing for possible cross contamination (e.g., cutting boards).
- Determine occupational exposure (e.g., animal or meat handling).
- Identify history of recent travel especially to areas with inadequate sanitation, water and sewage treatment.

- Assess for history of residing in areas with poor sanitation including improper water treatment and sewage disposal and include recent immigration.
- Identify recent illness in pets or acquisition of a puppy or kitten into the household.
- Assess for history of similar symptoms in other members of the household.
- Suspected contaminated food may be held to prevent of consumption.
- Suspected contaminated food may be destroyed.
- Identify contacts. Contacts include:
 - persons living in the household,
 - children and childcare workers in a daycare,
 - individuals exposed to the same source (if it is identified).

Treatment

Place the case on contact precautions and encourage fluids to maintain hydration. Fluid and electrolyte replacement may be needed in severe cases.

Exclusion

Exclusion (staying away from school or work) is recommended for symptomatic individuals who work handling food, or who work with infants, the elderly, the immunocompromised and with institutionalized patients or residents. Advise work restrictions until the case has been symptom free for 48 hours.

Management of Contacts

Identify the contacts and provide education regarding the signs and symptoms of infection and preventative measures.

Management of Outbreaks

An outbreak management team should be established to direct and coordinate the investigation as well as address infection prevention and control measures. If the outbreak is limited to one region the region is responsible to manage the outbreak; if more than one region is involved the outbreak will be managed by the province or in consultation with the province.

Education and Preventive Measures

- Implement measures applicable to diseases transmitted via the fecal-oral route
- Advise strict adherence to hand hygiene measures with an increased educational focus on recommendations as to when and how to wash hands
- Promote enhanced environmental cleaning of frequently touched surfaces
- Review the preparation and cooking of shellfish to prevent infection from that source
- Provide fact sheet available at http://www.health.gov.nl.ca/health/publichealth/envhealth/norovirus_2011.pdf

Reporting Requirements and Procedures

- The laboratory (hospital or public health laboratories) report case/s to the attending physician, the Chief Medical Officer of Health and the Medical Officers of Health (MOH)

- The MOH office will notify, as required, local physicians, nurse practitioners, environmental health officers, community health nurses, communicable disease control nurses (CDCNs) and infection control practitioners (ICP), in the particular region as required for follow-up and case investigation.
- EHO will conduct an investigation of the case under the direction of the MOH and provide case details as per the food history.
- CDCN enters the case details into the electronic reporting system and uses the CNPHI tool, if indicated, for alerts or outbreak summaries

Provincial Disease Control

- Reports the aggregate case data to Public Health Agency of Canada
- Provides an analysis of the case/s with reports in the Quarterly Communicable Disease Report (CDR), also posted on the Public Health website
- Coordinates the response if an outbreak across RHAs (CMOH will likely coordinate an outbreak across RHAs with input from disease control and environmental health.)

References

Nordqvist, Christian. "What Is Norovirus Infection? What Causes Norovirus Infection?." *Medical News Today*. MediLexicon, Intl., 13 Feb. 2010. Web. 31 May. 2013. Retrieved June 6th, 2013, from <http://www.medicalnewstoday.com/articles/179107.php>