



NOROVIRUS TOOLKIT FOR LTCH, RH, AND OTHER CLS

RVH IPAC HUB

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WHAT IS NOROVIRUS?

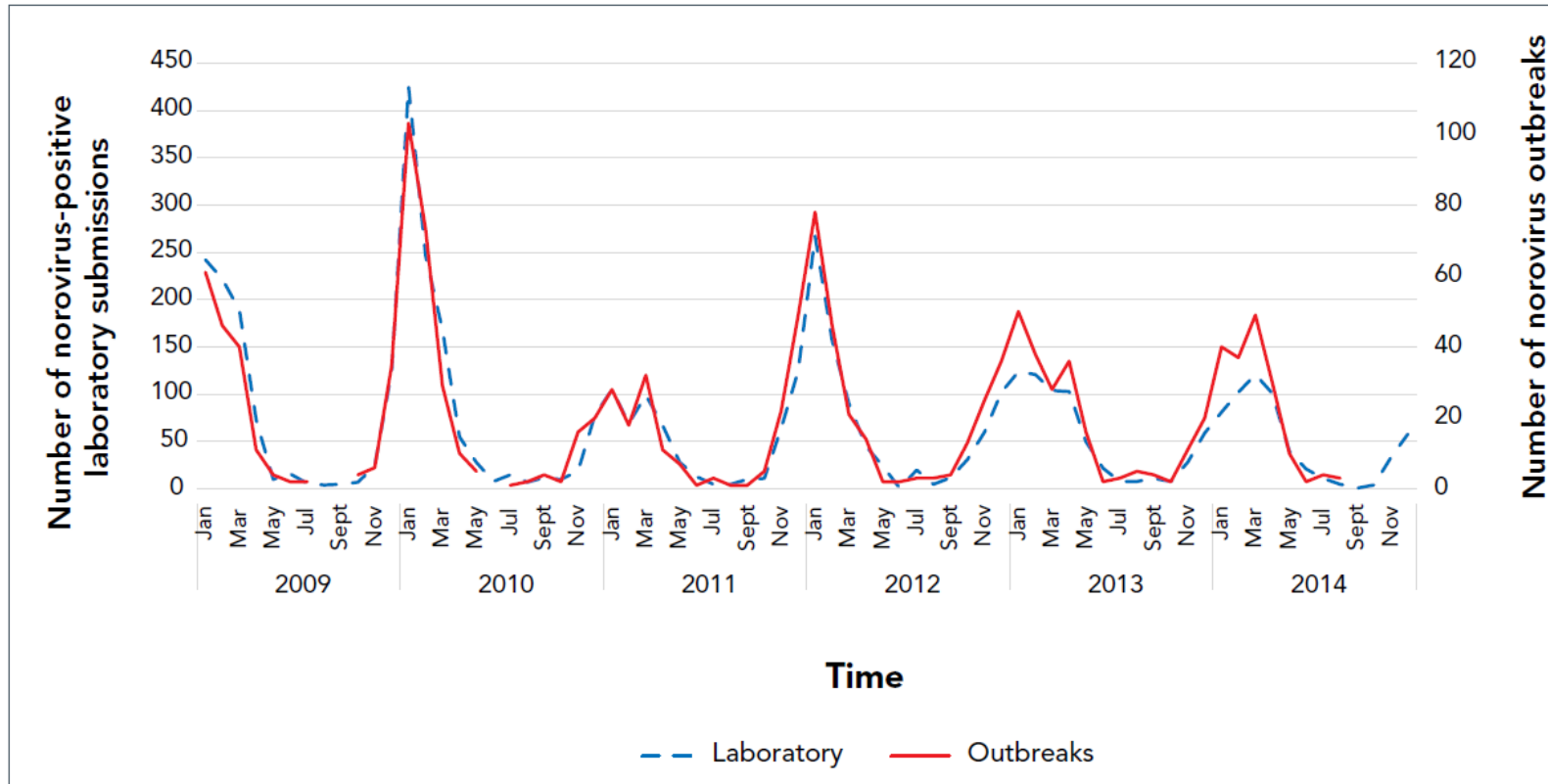
- Noroviruses are a genetically diverse group of single-stranded positive-sense RNA, **non-enveloped** viruses that belong to the family *Caliciviridae*.
- It is the most common cause of acute gastroenteritis and foodborne illness worldwide.
- It was previously called the Norwalk virus after the town in Ohio, US where a big outbreak in 1968 allowed scientists to isolate the first strain.
- Most outbreaks occur in hospitals, nursing homes, dining locations, schools, daycare centres, and vacation venues.
- Because of persistence of norovirus in the environment, outbreaks can last for a long time, sometimes even over 3 months.



EPIDEMIOLOGY

- Norovirus illness is self-limiting in healthy individuals. However, it is highly contagious and severe outcomes are more common in children, the elderly, and individuals with weakened immune system.
- People of all ages can get infected and sick with norovirus.
- Outbreaks occur throughout the year, but have a distinct winter seasonality. Because norovirus outbreaks peak during the coldest months of the year in temperate regions, norovirus infections are also known as ‘winter vomiting disease’. This seasonality is less evident in tropical regions.
- Noroviruses cause approximately 90% of all outbreaks of epidemic gastroenteritis. They are an important source of foodborne outbreaks globally.
- Human feces and vomit are the primary reservoirs for norovirus.

Figure 2: Seasonality of norovirus laboratory submissions^a and outbreaks^b in Ontario by month and year, 2009–2014



^a Laboratory submissions were confirmed using Public Health Ontario Laboratories (PHOL) data

^b Outbreaks were confirmed using integrated Public Health Information System (iPHIS) data

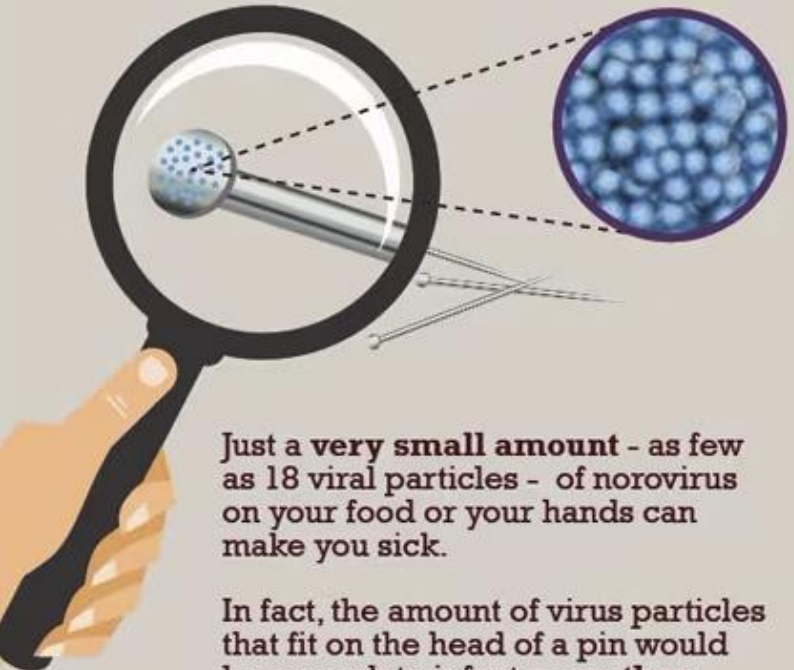
SIGNS AND SYMPTOMS

- The incubation period for norovirus infections is **12 to 48 hours**, but symptoms can begin as soon as 12 hours after being exposed to the virus.
- Norovirus infection causes sudden onset of gastrointestinal illness due to stomach or intestine inflammation, and common symptoms include:
 - Diarrhea (non-bloody)
 - Vomiting, nausea
 - Stomach cramps
 - Headache, muscle aches
 - Low-grade fever, and fatigue
- Frequent diarrhea and projectile vomiting can occur multiple times a day resulting in dehydration, fatigue, and weakness.
- Gastrointestinal symptoms typically last **2 to 3 days** with rapid recovery in healthy adults.
- Symptoms of dehydration include decrease in urination, dry mouth and throat, and feeling dizzy when standing up.

HOW DOES NOROVIRUS SPREAD?

- Norovirus spreads through the fecal-oral route, either via **direct** person-to-person contact, or via **indirect** transmission through contaminated food, water, or environmental surfaces.
- An infected person can shed billions of norovirus particles via vomit and diarrhea but it takes only a few virus particles (<10) to make another person sick.
- A person is most contagious when they are sick and for a few days after they recover.
- Food can get contaminated when a person with norovirus touches food with their bare hands, when it's placed on a counter or surface contaminated with feces or vomit particles, or when tiny droplets of vomit from an infected person spray through the air and land on the food.

How contagious is norovirus?



Just a **very small amount** - as few as 18 viral particles - of norovirus on your food or your hands can make you sick.

In fact, the amount of virus particles that fit on the head of a pin would be enough to infect **more than 1,000 people!**

CDC

Source: Journal of Medical Virology, August, 2008

HOW DOES NOROVIRUS SPREAD? (CONT.)

- Aerosolized droplets of vomit from a person with norovirus could also land on surfaces or enter another person's mouth.
- Norovirus can withstand high levels of chlorine and can spread through contaminated water that isn't treated properly, or when dirty ice is ingested from an ice machine.
- Fruits and vegetables that are watered with contaminated water in the field can also introduce the virus into food.
- Since norovirus is also relatively heat resistant and able to survive temperatures as high as 60°C or 140°F, eating raw or lightly cooked shellfish, especially oysters or prawns, increases the risk of contracting norovirus.
- Sharing utensils with people infected with norovirus, or touching objects or surfaces contaminated with norovirus and then putting your finger in your mouth by mistake without washing hands with soap and water first is also a common way of transmission.

IPAC MEASURES AND RECOMMENDATIONS

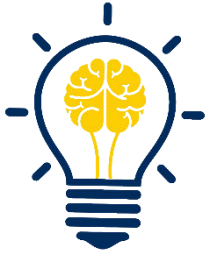


- Place a client/resident on **Contact Precautions** immediately if norovirus infection is suspected or confirmed. Gloves and a fluid-resistant gown should be worn by staff when providing care to a client/resident on Contact Precautions. If exposure to projectile vomiting or explosive diarrhea is anticipated, a medical mask and eye protection (e.g. face shield) should also be used.
- Additional Precautions should be in place for at least **48 hours** after symptoms have resolved.
- Hand sanitizer **does not** work well against non-enveloped viruses, including norovirus. Staff, visitors, and clients/residents should wash their hands often with soap and water for at least 20 seconds, especially after using the washroom, after touching contaminated surfaces, and before and after eating, preparing, or handling food.
- Hand sanitizers can be used in addition to hand washing but should not replace it.
- Discard all ready-to-eat foods, that is food not to be cooked, prepared by dietary staff that became ill while on shift. This may include salads, sandwiches, and baked goods.

IPAC MEASURES AND RECOMMENDATIONS (CONT.)

- When preparing food, wash fruits and vegetables well, and cook shellfish thoroughly to an internal temperature of at least 65°C. Quick steaming processes may not heat foods enough to kill noroviruses.
- For disinfection, use either a chlorine bleach solution with a dilution of 1:10 to 1:50, or a Health Canada-approved disinfectant with specific claim against norovirus.
- For laundry, immediately remove and wash soiled clothes and linen with detergent and hot water at maximum available cycle length, and machine dry at the highest heat setting.
- Staff that are symptomatic should be excluded from work until they are symptom-free for at least **48 hours**. Staff should also use gloves and gowns when handling soiled linen for laundry and always practice hand hygiene after doffing or removing dirty gloves.
- Soiled carpets and furnishings should be cleaned with hot water and detergent or **steam cleaned**. Vacuum cleaning is not recommended.

DID YOU KNOW?



- Multiple norovirus infections can occur in a lifetime as the result of limited duration of acquired immunity and cross-protection among different strains of norovirus.
- There is no specific treatment for norovirus infection. Due to the risk of severe dehydration, a person with norovirus infection should get bed rest and drink plenty of fluids.
- Norovirus infection is also sometimes called the “stomach flu”. However, the flu or influenza is a respiratory illness with symptoms of cough, sore throat and fever. Norovirus **is not** related to the flu.
- Norovirus can be detected in stool, vomitus, food, water, and environmental samples using RT-qPCR assays that are highly sensitive and specific.
- Norovirus infections are typically not reportable to public health. However, **outbreaks** of enteric illness that may be caused by norovirus in long-term care homes, retirement homes, and other congregate living settings **are reportable** to public health unit.

IMPORTANT CONSIDERATIONS FOR OUTBREAK MANAGEMENT

- A **confirmed outbreak** of norovirus is defined as two or more cases of clinical illness compatible with norovirus that can be epidemiologically linked to one another.
 - ✓ Cases are associated by exposure if onset of symptoms is within a **48-hour period**.
 - ✓ At least one of the cases should be laboratory confirmed.
- Begin a line listing by adding surveillance data from the daily sheets. Prepare separate line lists for clients/residents and staff. If useful, keep a separate line listing for each affected unit/floor.
- Special attention should be given to rule out **non-infectious** causes of gastroenteritis symptoms such as new medications, use of laxatives, or other non-infectious diseases.

OUTBREAK MANAGEMENT (CONT.)

- The IPAC lead for the home must update the line listing and inform the Public Health Unit liaison on a daily basis or as previously arranged.
- Post outbreak signage at the home entrance and affected units/areas, discouraging visitors during the outbreak period.
- Provide education to staff, residents, and visitors on what to expect, such as restrictions while visiting and the PPE required when providing direct care, when there is a gastroenteritis outbreak.
- Communicate with family of clients/residents who are placed on Additional Precautions and provide regular updates until outbreak is declared over.

CLEANING AND DISINFECTION FOR NOROVIRUS

For cleaning and disinfection of environmental surfaces, appropriate product approved by Health Canada with a drug identification number (DIN) should be used.

- Household bleach of 1:10 to 1:50 dilution is an inexpensive disinfectant that is effective against norovirus. However, bleach has a longer contact time (at least 5 minutes) and comes with harmful health risks to those that are exposed to its vapours, including irritation to mucous membranes, skin, and airways. In addition, bleach can also damage equipment and surfaces.
- Accelerated hydrogen peroxide (AHP) one-step cleaning and disinfectant solution and wipes (0.5% w/w) can kill noroviruses with a short contact time of usually **1-3 minutes**, and are not considered toxic or hazardous to health at their given concentration.
- Quaternary ammonium compound or quats, especially broad spectrum quats, can also kill norovirus. However, some quats may not be effective for complete disinfection of surfaces contaminated with norovirus at the concentrations recommended for general disinfection by the manufacturer.



QUESTIONS?

Please contact your RVH IPAC Hub liaison.

Ashley Allan

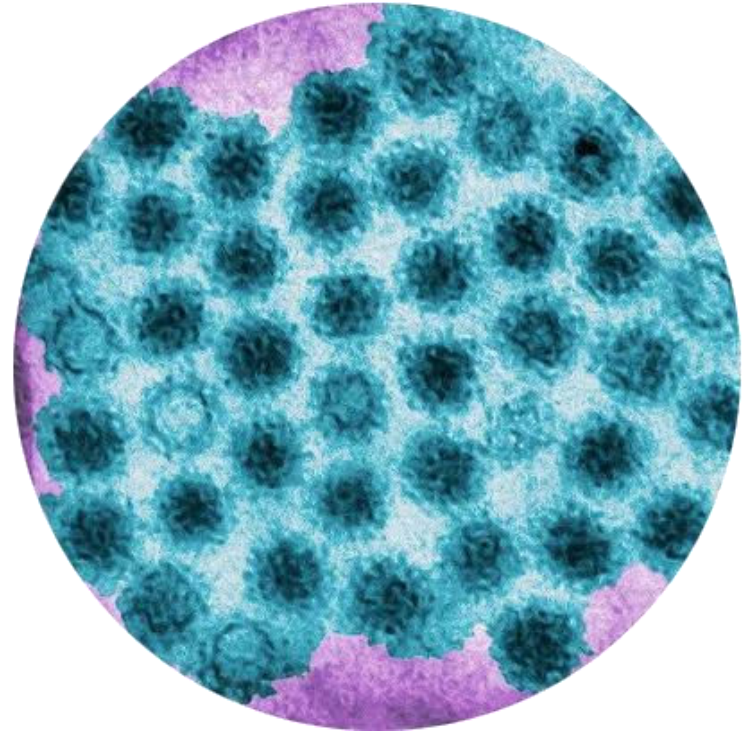
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- Appendix 1: Case Definitions and Disease-Specific Information - Disease: Gastroenteritis Outbreaks in Institutions and Public Hospitals. 2022. *Ontario Public Health Standards - Infectious Disease Protocol*. Ministry of Health. Available at: https://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/gastro_outbreaks_chapter.pdf. Accessed June 16, 2023.