



GASTROENTERITIS ON VISITING CRUISE SHIPS

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Management and Control of Norovirus and other
Gastrointestinal Outbreaks on Cruise Ships

This document provides guidance for the Ministry of Health, Seniors and Environment for the management of outbreaks of gastrointestinal illness aboard visiting cruise ships. It aims to minimize the impact of such outbreaks to the people of Bermuda, recognizing that each individual incident has to be managed according to current circumstances and available resources.

GASTROENTERITIS ON VISITING CRUISE SHIPS

MANAGEMENT AND CONTROL OF NOROVIRUS AND OTHER GASTROINTESTINAL OUTBREAKS ON CRUISE SHIPS¹

SUMMARY TABLE

Attack Rate (% ill)	Action	
	All ships must provide Maritime Declaration of Health for review, regardless of illness levels	
Less than 2% illness in passengers or crew	Reporting:	No additional reporting required
	Inspection:	No additional inspection required
	Disembarking:	No restrictions
Between 2% and 3% illness in passengers or crew (and/or one confirmed case of norovirus)	Reporting:	Ship to provide a gastrointestinal illness surveillance report to Ministry every 4 hours
	Inspection:	<i>If ship is in port</i> , Nurse Epidemiologist or designate to inspect sick bay and logs to ensure accurate documentation of illness Environmental Health Officers to review cleaning procedures
	Disembarking:	All passengers diagnosed with gastroenteritis should not disembark unless symptom free for at least 48 hours. Heightened sanitation measures at disembarkation Terminal workers and transport operators should be aware of the problem and notify the Ministry of illness in their area/vehicle
Illness reaches 3% or greater in passengers or crew (and/or three or more confirmed cases of norovirus)	Reporting:	Ship to provide a gastrointestinal illness surveillance report to Ministry every 4 hours or upon any change in the severity or pattern of illness
	Inspection:	<i>If ship is in port</i> , Nurse Epidemiologist or designate to inspect sick bay and logs to ensure accurate documentation of illness Environmental Health Officers to review cleaning procedures Department of Health assist with outbreak control measures
	Disembarking:	If ship is not in port, public health risk is considered high and bypassing of Bermuda should be considered. <i>If ship is in port</i> , all passengers diagnosed with gastroenteritis cannot disembark unless symptom free for at least 48 hours. Heightened sanitation measures at disembarkation. Terminal workers and transport operators should be aware of the problem and notify the Ministry of illness in their area/vehicle.

¹ Vessel Sanitation Program 2011 Operations Manual. U.S. Department of Health and Human Services. Centers for Disease Control and Prevention. National Center for Environmental Health. Vessel Sanitation Program. 2011

SURVEILLANCE OF ACUTE GASTROENTERITIS ON CRUISE SHIPS

BACKGROUND

Gastrointestinal illness (gastroenteritis) is inflammation of the stomach and small and large intestines. The main symptoms include vomiting and watery diarrhea. Other symptoms may include fever, abdominal cramps, nausea, muscle aches, and headache. Infections causing gastroenteritis can be viral, bacterial, or parasitic in origin. Norovirus is a common cause of viral gastroenteritis found on cruise ships. Types of bacterial gastroenteritis infections include *Escherichia coli* and *Salmonella*.

Individuals who have gastroenteritis can spread illness to others by touching handrails, elevator buttons, shared utensils, and other people while they are ill. Infections causing gastroenteritis can also be spread by contaminated food or water.

On cruise ships, when a higher than expected number of passengers or crew become sick, ships should implement specific actions as outlined in its Outbreak Prevention and Control Manual.

SURVEILLANCE

A reportable case of acute gastroenteritis is only a case reported to the master of the vessel, the medical staff, or other designated staff by a passenger or a crew member and meets the definition below.

A case is defined as:

- Diarrhea (three or more episodes of loose stools in a 24-hour period or what is above normal for the individual.
- OR
- Vomiting and one additional symptom including one or more episodes of loose stools in a 24-hour period, or abdominal cramps, or headache, or muscle aches, or fever (temperature of $\geq 38^{\circ}\text{C}$ [100.4°F]);

Note: Nausea, although a common symptom of acute gastroenteritis, is specifically excluded from this definition to avoid misclassification of seasickness (nausea and vomiting).

A standardized acute gastroenteritis surveillance log for each cruise should be maintained daily by the master of the vessel, the medical staff, or other designated staff. The surveillance log should list:

- The name of the vessel, cruise dates, and cruise number
- All reportable cases of acute gastroenteritis in a passenger or crew member
- For each passenger or crew member:
 - Person's name
 - Person's age
 - Person's sex
 - Designation as passenger or crew member
 - Crew member position or job on the vessel, if applicable
 - Cabin number Date of the first medical visit or report to staff of illness.
 - Time of the first medical visit or report to staff of illness
 - Date of illness onset
 - Time of illness onset

- Illness symptoms, including the presence or absence of the following selected signs and symptoms
 - Number of episodes of diarrhea in a 24-hour period
 - Number of episodes of vomiting in a 24-hour period
 - Additional symptoms including any blood in stool, abdominal cramps, headaches, and/or muscle aches

Questionnaires detailing activities and meal locations for the 72 hours before illness onset must be distributed to all passengers and crew members with acute gastroenteritis and available for review.

Through the Shipping Agent, the master of the vessel should provide the Ministry of Health with the ship's Outbreak Prevention and Control Manual.

Epidemiological, clinical, laboratory, and environmental support may be provided locally for control and management of the outbreak, as required and if resources allow.

SPECIAL CONSIDERATIONS FOR NOROVIRUS²

Norovirus has a small infective dose and the incubation period is 15 to 48 hours. The symptoms, normally persist for one to two days, and are generally mild but may be more serious in infants and seniors or when other pre-existing disease is present. In some individuals, the illness may be very short consisting of one or two episodes of vomiting followed by a complete recovery. Even in these individuals, the vomit may contain high levels of infectious virus, which may contaminate the environment creating an infection risk for others. Medical treatment is purely supportive and individuals continue to excrete the virus for several days although infectivity is greatly reduced 48 hours after the symptoms cease.

The risk of transmitting Norovirus varies through the course of infection. Virus is passed in large amounts in vomit and faeces at the onset of symptoms and there is a considerable risk of transmission during this phase. When the symptoms cease the risks of transmission gradually reduce until about a week from when symptoms stop, but after 48 hours they are unlikely to transmit the disease further if they practice good personal hygiene.

Social interaction increases the risk of infection and this may be further exacerbated if those affected are involved in food preparation and handling where there is a potential for the food to be contaminated.

A person infected with Norovirus can contaminate the surroundings, including furnishings, making the area highly contagious. Until the area is properly cleaned it is a considerable risk to all unprotected individuals.

Norovirus poses a significant public health risk to Bermuda.

² *Guidance for management of Norovirus Infection in Cruise Ships*. Norovirus Working Group. Health Protection Agency. 2007.

REPORTING TO MINISTRY

The Maritime Declaration of Health must be presented prior to arrival in Bermuda, which provides a summary of the state of health of all persons on board the ship. If there are cases of illness on board that are infectious in nature, a gastrointestinal illness surveillance report should be provided to the Ministry via the shipping agent. The gastrointestinal illness report should be sent via the shipping agent and must include the following:

- Name of the vessel
- Dates and times of intended arrival in and departure from Bermuda
- Total numbers of reportable cases of acute gastroenteritis among passengers
- Total numbers of reportable cases of acute gastroenteritis among crew members
- Total number of passengers and crew members on the cruise

If the number of cases exceeds 2% of passengers or 2% of crew (and/or if there is a confirmed case of norovirus on board), reports should be updated and provided every 4 hours.

A special report should be made **immediately** when the number of cases reaches 3% of passengers or 3% of crew (and/or if there are three or more confirmed cases of norovirus on board). Reports should then continue every 4-hours or upon any change in the severity or pattern of illness.

These reports allow for early opportunities for consultation, with the aim of minimizing further spread of the illness. Restrictions may be applied to identified symptomatic and recovering individuals. Consideration must be given to passengers and crew who may be more likely to develop the illness because of their contact with existing cases as these individuals can be difficult to manage.

Note: An outbreak is considered over if there have been two successive incubation periods with no additional reported illness. [For most gastrointestinal illnesses, this is 96 hours (4 days).] Once an outbreak on a ship is over, the risk to Bermuda is low.

Attack rates are calculated as follows:

1. $(\# \text{ of ill passengers} / \# \text{ of total passengers}) \times 100\%$
2. $(\# \text{ of ill crew members} / \# \text{ of total crew members}) \times 100\%$

Examples are provided below:

# of ill Passengers	Total # of Passengers	Attack rate - Passengers
20	2000	1.00%
40	2000	2.00%
60	2000	3.00%
# of ill Crew	Total # of Crew	Attack Rate - Crew
10	1000	1.00%
20	1000	2.00%
30	1000	3.00%