



Maritime and Coastguard Agency



Guidance for the Management of Norovirus Infection in Cruise Ships

Norovirus Working Group



Acknowledgements

Health Protection Scotland for the use of their guidance document on the Identification and Management of Outbreaks of Norovirus Infection in Tourists and Leisure Industry Settings, Members of the partner organisations for feedback and advice, Anne Trivass, Cheshire & Merseyside HPU for formatting and Dr. Irene Gonsalvez for support to the HPA Gastrointestinal Diseases Programme Board in editing and publishing the guidelines.

Norovirus infection in cruise ships

The purpose of this document is to set out guidance for health professionals, port health and other agency staff and the crew of affected vessels for the identification and management of Norovirus outbreaks aboard cruise vessels. It also forms the basis of an approach to minimise the impact of the disease being brought aboard a vessel by passengers and crew, particularly during periods of heightened activity of the virus in the UK and other countries where a significant number of passengers are due to join the vessel.

This is not a prescriptive document as it is recognised that each individual incident has to be managed according to the circumstances prevailing and the decisions of the outbreak control group will reflect such variations in circumstances.

Three working groups considered the different important aspects of good management. Wherever possible the groups have sought evidence based practice as their standard and their topics were:

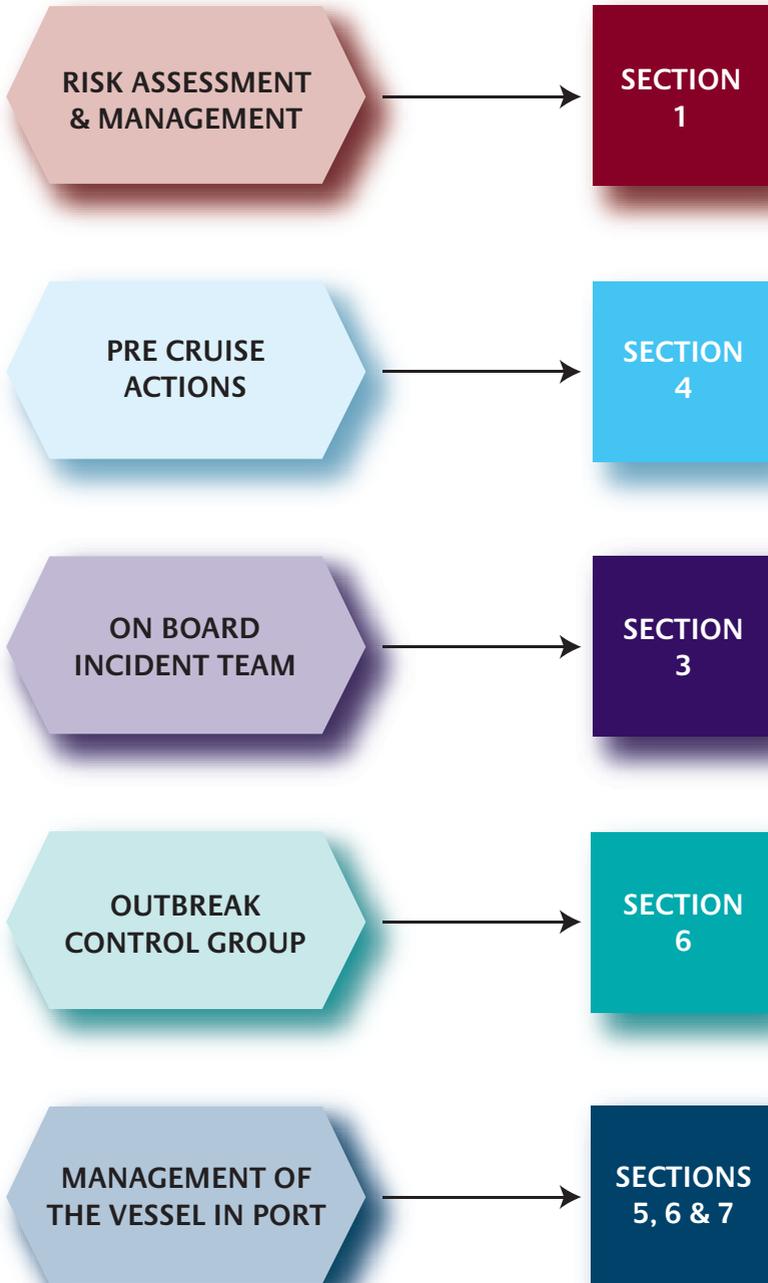
- 1. The management of the disease at sea and the support required from the home port health authority. This also included suggested pre-embarkation tasks for the travel company designed to minimise the risk of infection being brought on board ship by passengers and crew and to help passengers focus on the risks of infection.**
- 2. The arrangements for vessel sanitation when reaching its home port or the first UK port. This group examined the various cleaning methods and determined the basis for ensuring the vessel did not constitute an on going infection risk.**
- 3. The inter agency nature of the port health response was examined by the third group and the issues of communication, collaboration and corporate responsibility according to the current statute were examined. Some of the findings will undoubtedly serve to ensure proper engagement with the industry in the future.**

The members of each group appear in Appendix 1 with their designation.



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Abbreviations

APHA	Association of Port Health Authorities
CBRN	Chemical/Biological/Radiological/Nuclear
CCDC	Consultant in Communicable Diseases Control
CoP	Code of Practice
CPHM	Consultant in Public Health Medicine
DH	Department of Health
EHO	Environmental Health Officer
EPA	Environmental Protection Agency
EU	European Union
FCV	feline calicivirus
FSA	Food Standards Agency
GP	General Practitioner
HACCP	Hazard Analysis and Critical Control Point
HEPA	High Efficiency Particulate Air
HPA	Health Protection Agency
HPU	Health Protection Unit
HSE	Health and Safety Executive
ICN	Infection Control Nurse
ID	Infectious Diseases
LA	Local Authority
LaCoRS	Local Authorities Coordinators of Regulatory Services
MCA	Maritime and Coastguard Agency
MDH	Maritime Declaration of Health
MoU	Memorandum of Understanding
NHS	National Health Service
NLV	Norwalk like virus
NRPB	National Radiation Protection Board
NV	Norovirus
OCG	Outbreak Control Group
PCT	Primary Care Trust
PHA	Port Health Authority
PHICN	Public Health Infection Control Nurses
PHLS	Public Health Laboratory Services
ppm	parts per million
QUAT	Quaternary ammonium compounds
RNA	Ribonucleic acid
SpHA	Special Health Authority
SRSV	Small Round Structured Virus

		<i>Page</i>
	Section 1 Risk assessment and management	5
	Section 2 Initial actions on declaring an outbreak of Norovirus at sea	9
	Section 3 Control measures by the onboard incident team	15
	Section 4 Pre-outbreak information for passengers about Norovirus	19
	Annex A An example of a precautionary health advisory letter for passengers	21
	Annex B Public health questionnaire to be completed by passengers over 18	22
	Section 5 Summary of the management of cruise liner Norovirus incidents by Port Health and Allied Agencies	23
	Annex C Diagrammatic summary of initial actions taken when a Norovirus incident is notified up to the vessel reaching port	26
	Section 6 Protocol for management of Norovirus outbreaks in port	27
	Section 7 Cleaning procedures and agents	33
	Section 8 Specialist cleaning contractors	41
	Section 9 Disinfectant agents	43
	Section 10 Hand hygiene	49
	Section 11 Addressing the risk of further transmission	53
	Annex D Norovirus: Guide for Coach and Third Party Premises	57
	Section 12 Agency roles and communications	59
	Annex E Outbreak of Communicable Disease Questionnaire	67
	References	71
	Appendix 1 Norovirus working group members	72

SECTION 1

Risk assessment and management

1.0 BACKGROUND

Norovirus is a major cause of epidemic – acute gastroenteritis and diarrhoea – in children and adults. The cause of illness, norovirus (previously known as Norwalk like or SRSV) was described in 1968 in samples from an elementary school in Norwalk, Ohio. The disease was recognised in 1929 and termed Winter Vomiting Disease because of the increased prevalence in the winter months. It can be detected throughout the year. Noroviruses belong to the family *Caliciviridae*. At least three genogroups and many genotypes are recognised but there is no agreed nomenclature and different approaches have been used (e.g. Gill.4 or Lordsdale).

Noroviruses have been described in cattle, pigs, mice and humans, but the animal strains are quite distinct from human noroviruses. The disease is usually spread from person to person or from the contaminated surroundings. Occasionally food may be implicated in its transmission and a small number of incidents each year are attributed to bivalve molluscs such as mussels, oysters which feed in water polluted with human sewage.

The infection 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 the extremes of age 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.

Norovirus circulates widely in the population but may only come to the notice of the health professionals as and when there are outbreaks in semi closed communities such as at schools, hotels, hospitals. Outbreaks on cruise liners have been recognised for over 20 years and detailed guidelines produced, but management is not consistent and the aim of this guidance is to produce straightforward and practical advice to aid the industry and public health authorities in managing these outbreaks.

1.1 Assessment of risk

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

Section 1

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

1.2 Management of risk

In a cruise vessel where passengers are expecting to enjoy a relaxing holiday a protocol needs to be robust enough to manage any possible outbreak but allows a rapid return to normal holiday activities by infected passengers.

The principles of control are to isolate those individuals who are currently at high risk, to promote scrupulous personal hygiene, and to oversee the return to normal activities of those recovering. In addition a vigorous cleaning programme should be established to minimise the further transmission from the contaminated environment. Ideally, those engaged in cleaning activities during periods of high Norovirus activities should have no other duties.

Risk management can be conveniently considered in five periods of a cruise. The first being the pre-embarking phase, the second during a voyage with little or no Norovirus activity. The third on stop off to ports, the fourth is the incident phase and lastly is the arrival in a UK port, with the off loading of passengers. The last two phases are covered in detail later.

Clearly there would be considerable benefits in screening out passengers who are suffering from an episode of Norovirus. Certainly symptomatic individuals should be identified and prevented from coming aboard. There is an insurance issue here and perhaps the industry could consider an offer of an alternative holiday at some future date to encourage honest reporting. Passengers who may be more likely to develop the disease because of their contact with existing cases are more difficult to manage and need careful consideration. However, restrictions might be an option during periods of elevated Norovirus activity in the UK. The industry would require regular information about the status of the disease circulating within the population.

An information pack should be sent to all passengers prior to sailing giving details of the virus and the control measures employed by the ship's crew to address an incident. There are several good examples of this practice already employed by travel companies.

SECTION 2

Initial actions on declaring an outbreak of Norovirus at sea

Algorithm for prevention and control of Norovirus outbreaks on cruise ships

1 Pre outbreak alerting of passengers & pre-embarkation screening

Prior to embarkation passengers should receive a routine **health questionnaire and information** about the symptoms and signs of Norovirus infection. This should include the potential impact on other passengers and the recommendations for helping both to prevent illness and the action passengers should take if they do become ill with possible Norovirus.

The Ship's Doctor, Ship's Master and Senior Officers should be informed immediately of any suspected cases and the relevant Port Medical Officer and Port Health (Home Authority or next UK port) then informed in the event of a suspected outbreak

2 Risk assessment and response to suspected outbreak

Initial urgent enquiry by Ship's Doctor using a **standard assessment questionnaire** as a guide to identify presumptive Norovirus outbreaks and institute immediate control measures. Key diagnostic criteria for Norovirus outbreaks¹ are:

1. Vomiting (prominent symptom and often projectile) in > 50% of cases
2. Duration of illness (12-72 hours)
3. Incubation Period (15-48 hours)
4. Passengers generally affected initially and then crew with a high degree of passenger contact

3 Declaration and control of outbreak at sea

Declare outbreak according to standard criteria.

Convene Incident Team and commence detailed investigation **using standard surveillance proforma**

Isolate and manage cases according to enteric risk assessment^{1 2}

Consider need for other time limited **control measures** following immediate period of isolation and to inform other passengers on recommended personal hygiene to prevent spread of infection

Institute recommended **environmental cleaning regime**

Enteric Risk Assessment and Infection Control

For Passengers and Staff in Enteric Risk groups² Group A-C

(Older children and adults where hygiene arrangements are unreliable)
(Children under 5 years)
(Food handlers and medical staff)

Isolate in own cabin from close contact with other passengers and crew until **48hr** after symptoms have ceased

For Other Passengers and Crew

Isolate in own cabin from close contact with other passengers and crew until at least **24hr** after symptoms have ceased

Cabin contacts of affected passengers and crew

Contacts without symptoms do not require isolation, but should receive information about the prevention and control of Norovirus outbreaks on cruise ships.

References

¹ Sub-committee of the PHLS Advisory Committee on Gastrointestinal Infection. Preventing person to person spread from gastrointestinal infections: guidelines for public health physicians and environmental health officers. http://www.hpa.org.uk/cdph/issues/CDPHvol17/No4/guidelines2_4_04.pdf

² PHLS Viral Gastroenteritis Working Group. Management of hospital outbreaks of gastroenteritis due to small round structured viruses. http://www.hpa.org.uk/infections/topics_az/Norovirus/hospital_Norovirus.pdf

2.0 ACTION BY SHIP'S MANAGEMENT TEAM

Passengers who report relevant symptoms should have a health assessment which may result in denial of boarding.

Maintain awareness so that symptomatic patients are identified if they vomit in public places, attend the medical centre or report to their cabin attendant.

Evidence of any public or concealed vomiting or diarrhoea should be investigated and managed by immediately implementing aggressive local disinfection and isolation procedures.

2.1 Norovirus assessment questionnaire

Detailed medical questionnaires should be completed for all cases including:

- The person's name, age and gender;
- The first date of clinic visit or report to staff of illness;
- Passenger or crew member;
- The crew member position or job on the vessel, if applicable;
- Cabin number;
- Restaurant meal seating information (passengers) or recent mess room usage (crew);
- Details of foods / drinks eaten for 72 hours prior to onset of illness and the location(s);
- Whether they have eaten/drunk ashore and if so, details;
- Details of activities including tours undertaken in the last 72 hours;
- Date and time of illness onset;
- Illness symptoms, including number of episodes each of diarrhoea and vomiting per day;
- Known contact with a confirmed case;
- Whether faecal sample requested, received and submitted;
- Use of anti-diarrhoeal medication; and
- The presence of underlying medical conditions.

2.2 Guidance and criteria for declaration of an outbreak of Norovirus

An outbreak of infectious intestinal illness would be declared if more than 2% of passengers and/or 2% of crew meet the case definition.

The following case definition should be used:

- a) Diarrhoea (three or more episodes of loose stools in a 24 hour period)
- Or**
- b) Vomiting and one additional symptom from: one or more episodes of loose stools in a 24-hour period, abdominal cramps, headache, muscle aches and fever.

Section 2

If an outbreak is suspected, investigation into the likely source and type of illness should begin immediately and an incident team convened.

2.3 Membership of incident team (whilst at sea)

Ship's Doctor
Ship's Master or Deputy
Ship's Executive Purser or Hotel Manager
Ship's F&B Manager or Catering Officer
Ship's Chief Technical Officer
Tour Company Representative (if relevant)
Company Health Officers (if applicable)

NB: The ship based incident team would normally liaise closely with any shore based medical and/or public health teams

2.4 Terms of reference of incident team

To review collected information on suspected cases and decide whether there is an outbreak and whether it is caused by Norovirus or another agent. The incident team should:

- Immediately inform the relevant Port Health Authority (PHA) of the situation
- Implement control measures for passengers and crew (personal hygiene and isolation) and for the environment (cleaning and disinfections)
- Ensure adequate medical care of affected passengers and crew
- Ensure collection and appropriate storage of faecal specimens
- Provide clear and accurate information and advice to passengers and crew
- Ensure adequate surveillance and monitoring arrangements are in place
- Assess the safety of the vessel with regard to cover for essential services on board

2.5 Checklist of specific measures and actions for control of Norovirus outbreaks affecting cruise ships

Once an outbreak is suspected investigation into the likely source and type of illness should begin immediately together with implementation of control measures.

2.5.1 Alerting

The ship's medical staff, if carried, or other staff who have received medical/first aid training should consult with shore based medical and public health specialists.

The 'home port' PHA should be notified and asked to advise.

2.5.2 Investigation

Detailed medical questionnaires should be completed for all cases (see above). Food histories should be obtained from cases i.e., detailed food and drinks consumed in the 72 hours before onset of symptoms.

Faecal samples (6-10) should be taken from a representative sample of those affected collected within 48 hrs and submitted to a reputable laboratory (nationally accredited) as soon as possible for viral and bacterial analysis.

It may also be useful to take samples of selected foods (particularly any suspected items or leftovers) if available.

An investigation into the food and beverage operations on board should always be carried out even when a 'person to person' transmission is suspected as viral gastroenteritis can originate in food and Norovirus disease may disguise some other food related incident.

Similarly an investigation into the water system on board should be carried out to check that no potable water could have caused the outbreak. Checks should also be made on any swimming pools, spa pools, fountains and any other water systems.

An inspection of air conditioning systems should be made to check that no faults or failures in the system might be contributing to the spread of illness.

An examination of affected cabin positions should be made to see if particular areas of the ship are affected and if there could be a link to the air conditioning system.

An investigation into accommodation and housekeeping operations on board should be carried out to check that no work could be contributing to the spread of the outbreak.

Daily gastrointestinal illness surveillance log should be maintained. Computer software is available to assist with this.

When the ship is due to call at a UK port the designated officer must comply with the 'Maritime Declaration of Health' (MDH) requirements to report the outbreak to the PHA 24 hours before arrival. However, to enable a proper cleaning response in port it is recommended that incidents at sea should be reported as soon as practically possible to the PHA.

SECTION 3

Control measures by the onboard
incident team

3.0 CONTROL MEASURES BY THE ONBOARD INCIDENT TEAM

3.1 For all crew and passengers

All patients with diarrhoea and vomiting should, if possible, be examined and treated in their own cabins.

Standard medical treatment should be used. If viral gastroenteritis is suspected this should include rehydration and non-sedating anti-emetics.

Medical staff should use universal precautions by wearing disposable aprons and gloves when examining all patients with acute gastrointestinal symptoms.

3.2 For crew with symptoms

Food handlers and medical staff should be quarantined for at least **48 hours following resolution of their symptoms**. Other crew should be isolated until symptom free for 48 hours.

Cabin companions of affected individuals should ideally be allocated jobs in non-food or beverage areas until **48 hours has passed and actively monitored for a further 24 hours**.

Every attempt should be made to relocate unaffected cabin companions in alternate accommodation.

3.3 For passengers

All passengers diagnosed with gastroenteritis should be asked to remain in their cabins for at least 24 hours after full resolution of their symptoms. **They should be offered and advised to use room service. They should not be allowed eat in any buffet areas until they have been asymptomatic for 48 hours** They should also be encouraged to use their cabin en-suite facilities for a further 24 hours (i.e. a total of 72 hours symptom-free).

3.4 Stop all self service of food to passengers and crew

Remove shared snacks and open 'nibbles' from communal areas.

All food should be consumed only in the restaurants or food outlets.

Cabin service should be provided for affected passengers and crew who are isolated.

Affected passengers should not use communal facilities during their period of isolation (e.g. swimming pools and exercise facilities).

3.5 Cleaning

A dedicated cleaning team should be established for environmental cleaning and servicing of cabins of affected passengers. Cleaning advice is to be found within this document within **section 7**.

SECTION 4

Pre-outbreak information for passengers
about Norovirus

4.0 PRE-OUTBREAK INFORMATION FOR PASSENGERS ABOUT NOROVIRUS

- 4.1** Many travel companies already provide information to customers about Norovirus infection with their travel pack. During periods when the disease is particularly active in the UK such measures are essential to help prevent incidents at sea. Nevertheless it is unlikely that such a course of action alone will stop the disease from being brought onto cruise vessels. To assist with the management of outbreaks or to reinforce the information for passengers when the vessel has been subject to a recent incident, additional material should be provided as a “pillow letter”. This should explain how the ship’s crew will be managing such an incident during the cruise. Any particular details regarding the conduct of passengers with the illness and the measures to assist with their confinement should be included to encourage good compliance.
- 4.2** A pre-cruise advisory letter on GI infection is to be found in **Annex A** to this section.
- 4.3** Every passenger and all crew / visitors should complete a pre-boarding health questionnaire at the cruise terminal. This need only be a simple declaration of freedom from gastrointestinal illness presently and over the preceding 2 days. An example of such a questionnaire is to be found in **Annex B**.
- 4.4** During an incident it would be beneficial if passengers were to be provided with letters (sometimes referred to as “pillow letters”) reminding them of the symptoms of the disease and the procedures employed to support those affected in their cabins. A simple and discrete method of informing the ship’s medical team of their illness should also be provided together with details of the passengers’ responsibilities with regard to the restrictions employed to control the outbreak. It would be helpful if these documents were developed and printed in advance.

ANNEX A

An example of a precautionary health advisory letter for passengers

PRECAUTIONARY HEALTH ADVISORY NOROVIRUS

Dear Passenger,

You may be aware from media reports that there is currently a worldwide increase in the incidence of a mild gastrointestinal illness caused by Norovirus, (formerly called Norwalk Virus). It has caused many outbreaks particularly throughout the UK, Europe and North America. Whilst the majority of these outbreaks occur ashore, a small number of cruise ships have been similarly affected. Norovirus is so widespread in the community that only the common cold is reported more frequently. In fact, the UK Health Protection Agency (HPA) estimates that up to 1 in every 30 persons in the UK will contract this illness on land each year.

If you do unfortunately experience the acute gastrointestinal symptoms of vomiting or diarrhoea within 2 days of departing for your cruise, please notify our Customer Service Department by telephoning ----- who will be able to assist you further. Detailed information on this illness can also be found on the back of this page.

The company's ships meet the US Vessel Sanitation Program standards and undergo regular, unannounced inspections by the agencies responsible for these Programs. Additionally, our employees operate a comprehensive passenger and crew health surveillance system. Should you experience any symptoms of vomiting or diarrhoea whilst onboard, it is **essential** that you telephone the Medical Centre immediately, by dialling 999. There will not be a charge for this service if the medical staff determines your symptoms may be caused by an acute gastrointestinal infection.

Norovirus is highly contagious and thus easily passed from person to person. We would therefore like to remind you that the simplest **preventative measure** you can take to help maintain our healthy environment is to wash your hands frequently and thoroughly with soap for at least 20 seconds and rinse them well under running water. We strongly recommend that you follow this procedure each time you use the toilet, after coughing or sneezing and before eating, drinking, or smoking. Avoid touching your mouth.

Thank you for taking the time to read this important information. The success in controlling the introduction and spread of this virus relies heavily on the cooperation of you and your fellow passengers. We hope you will understand that we are making these recommendations in order to ensure that your cruise is as enjoyable as possible.

Yours faithfully

ANNEX B

**PUBLIC HEALTH QUESTIONNAIRE
TO BE COMPLETED BY ALL PASSENGERS OVER 18
1 FORM PER PARTY**

Name: _____

Cabin Number: _____

Date: _____

Number of passengers covered by this questionnaire: _____

Name of children under 18 travelling with you:

1 _____

2 _____

3 _____

4 _____

To assist us in preventing the spread of gastrointestinal illnesses during your cruise, we should be grateful if you would please answer the following question:

Within the last **2 days**, have you, or any person travelling with you, developed new symptoms of diarrhoea or vomiting?

NO

YES

* If you have answered YES, then you may be assessed further by the shipboard medical staff

I certify that the above is true and correct and I understand that being untruthful in completing this form may have serious public health implications for my fellow passengers

Signature: _____

Thank you for taking the time to complete this questionnaire. We appreciate your cooperation in this important matter

SECTION 5

Summary of the management of cruise liner Norovirus incidents by Port Health and Allied Agencies

5.0 SUMMARY OF THE MANAGEMENT OF CRUISE LINER NOROVIRUS INCIDENTED BY PORT HEALTH AND ALLIED SERVICES

On being informed of an outbreak of Norovirus on a vessel due to arrive in port the PHA or equivalent should immediately inform the local Health Protection Unit (HPU) and in particular the medical officer responsible for the port health function, (normally the CCDC). If the situation requires a formal Outbreak Control Group (OCG) this should be arranged without delay. The group may meet physically or organise a teleconference if that is more convenient.

The purpose of the OCG is to ensure that the vessel's incident team receives the necessary assistance to manage the outbreak whilst at sea and to ensure that the arrangements are made on arrival in port to deal with the disembarking process and to sanitise the vessel before further cruising.

5.1 The composition of the Outbreak Control Group (OCG)

The OCG composition will depend upon the circumstances but it is suggested that the following are included as a minimum:

- a) Port Health Medical Officer or CCDC
- b) Local Authority or Port Health representation
- c) Infection Control Nurse (ICN)
- d) The Director of Public Health or Representative from the PCT
- e) Microbiologist / virologist from the appropriate laboratory
- f) Representatives from the shipping agent involved
- g) Public relations officer (HPA)
- h) Director of infection control of any receiving hospital
- i) Administrative officer for note or minute taking

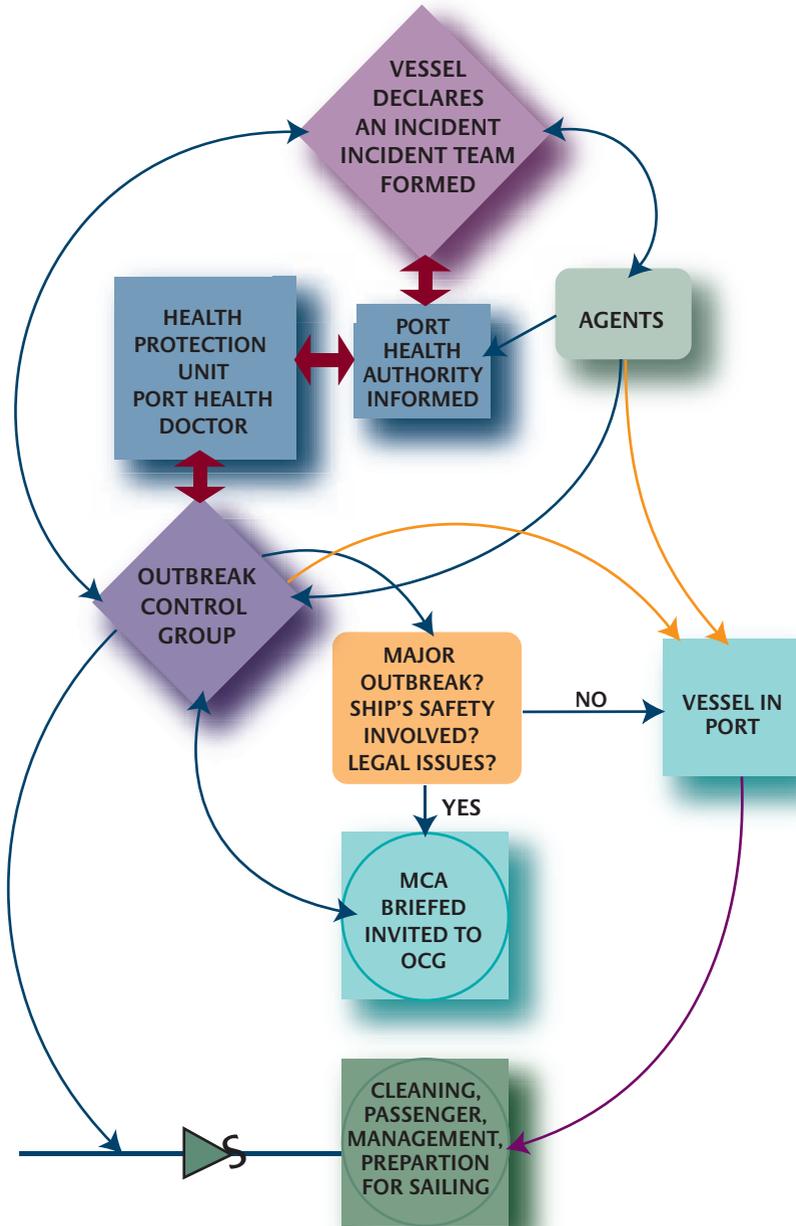
5.2 Agenda for the outbreak control meeting

The agenda should include:

- a) A report from the vessel's incident team
- b) Laboratory results if available
- c) Port sanitation proposals and arrangements
- d) Disembarking arrangements
- e) Hospital and medical requirements for passengers and crew
- f) Further assistance for the ship's crew
- g) Additional advice and support for the agents
- h) Any food implications
- i) If applicable public relations matters (may require a holding press statement)
- j) Further meetings and procedure for if the situation changes

- 5.3** Norovirus incidents rarely need the vessel to be confined to port unless there is evidence of serious circumstances prevailing for example, a suspicion of co-existing bacterial infection, a fatality or a concern as to the vessel's response or facilities. However, if the OGC considers that a vessel may need to be confined in port for whatever reason the Maritime and Coastguard Agency (MCA) must be informed and thoroughly briefed as to the situation without delay so that the MCE can consider whether it needs to exercise any of its statutory powers. Similarly, if there are doubts about the vessels safety because of the sickness of key staff the MCA needs to be urgently informed. In both cases the MCA would then be fully integrated into the OCG.

Summary of action for Norovirus incident



SECTION 6

Protocol for management of Norovirus outbreaks in port

6.0 PROTOCOL FOR MANAGEMENT OF NOROVIRUS OUTBREAKS

6.1 Roles and responsibilities

The Master of a vessel is responsible for notifying the PHA, (or local authority – LA – where there is no PHA) of the presence of infectious disease or conditions liable to convey the spread of infectious disease, (conditions), on board a vessel under the Public Health (Ships) Regulations 1979. It is a legal requirement that any notification of a disease, or conditions, must be made not less than four hours and not more than twelve hours in advance of the vessel's arrival in port.

However where there is an outbreak on board a vessel it is in the interest of all parties to notify the Port Health Authority (PHA) at the earliest opportunity The PHA will notify the local Consultant in Communicable Disease Control (CCDC) or their local Health Protection Unit (HPU) within the HPA. Early notification gives the Authority time to liaise with the HPA and the ship's doctor so that the best possible advice is available.

Where a ship has arrived from a port outside Belgium, France, Spain, Greece, Ireland, Italy, the Netherlands, the UK, Isle of Man or Channel Islands the Master is required officially, to submit the notification in the form of a Maritime Declaration of Health (MDH) This form is available from the PHA/LA. When a MDH is submitted, the vessel is required to obtain 'free pratique' (permission to disembark passengers and goods from the vessel), from the PHA/LA. **In practice a phone call, fax or email to the PHA is quicker.**

The Master of a ship arriving from the above EU ports is required to complete a MDH if notified by the medical officer that compliance with those provisions is necessary on account of danger to public health (Reg. 15)

It is essential that Masters of passenger vessels report occurrences of disease of public health significance to the port of arrival, and their home port as soon as they are identified, or whenever there is any question of concern.

Methods of notification include telephone, facsimile, email or radio by the vessel direct to the PHA/LA or via the vessel's agent. In smaller ports they may notify the Port Operator or Harbourmaster. The PHA/LA should ensure that Masters of vessels, their agents and port operators are familiar with legislative and local requirements, the methods of communication of notifications available, contact details and provide systems of receipt of notifications at all times which will ensure the timely transfer of messages to appropriate persons.

It is important that in the event of an incident or outbreak of infectious disease, (or if either is suspected), that both the local authority and vessels arriving at ports understand the requirements, communication methods, arrangements and actions expected of all parties to ensure the most appropriate response.

advised to maintain a presence in ports which enables the gathering of intelligence of the presence of disease on board vessels.

On receipt of a notification and assessment of information received, the PHA/LA, according to locally agreed plans should contact the local CCDC or HPU, who will provide support and assistance in the management of the incident or outbreak according to the nature or severity of the infection, and ensure that the health needs of ill travellers are met. PHAs/LAs, HPUs, vessels and their agents should ensure that they maintain the relevant contact details.

The management of appropriate on-shore facilities is the responsibility of the port operator under the Health and Safety at Work Act etc., 1974. PHAs/LAs should agree and document with port operators and vessel management the provision, maintenance, cleaning and disinfection of on-shore facilities and amenities. In the case of serious incidents/outbreaks a procedure should be developed which separates potentially infectious disembarking and embarking passengers either through physically separated routes or time separated with enhanced cleaning and disinfection procedures.

The carriage of passengers to and from the terminal may give rise to the spread of infection. Operators of all vehicles used to carry passengers should be aware of the precautions needed to prevent the spread of disease and methods of cleaning and disinfecting.

When notifications of incidents/outbreaks are received by the PHA/LA, they should notify the port operator and vessel, in advance of the vessel's arrival, that enhanced measures will be required. PHAs/LAs should visit the terminal facility servicing the vessel to ensure that all procedures are operational.

6.2 Investigation procedures

Investigation procedures will vary according to conditions, reported local plans, assessment and practices and should be agreed prior to the occurrence of incidents/outbreaks.

Reference should be made to the Department of Health's (DH) guidance on *Outbreaks of Infectious Disease* and in consultation with the local HPU.

Inspections of vessels should be carried out according to Codes of Practice (CoP) issued by the Food Standards Agency (FSA), with consideration of regulations issued by the Maritime Coastguard Agency (MCA) and guidance issued by the Health and Safety Executive (HSE) and the HPA.

Vessels operating a food business are required to maintain a food safety management system based on the principles of Hazard Analysis and Critical Control Point (HACCP). The vessel's system of control provides essential information on which inspections may be based and will often be part of an overall ship safety management system, including procedures for dealing with incidents and outbreaks of infectious disease. In the case of vessels regularly visiting a port, PHAs/LAs should ensure that they are familiar with the vessel and relevant parts of the vessel's safety management systems.

Section 6

In all cases it is a legal requirement to ensure that inspecting staff are appropriately authorised, qualified and trained for the inspection of the type of vessel and the investigation of incidences of infectious disease and their control.

With vessels not on regular scheduled stop, PHAs/LAs can request to view previous hygiene inspection reports and relevant documents, or may contact UK ports previously visited to ascertain historical compliance with legislative requirements.

PHAs/LAs will wish to pre-determine the appropriate human, knowledge and equipment resources required for inspection of vessels arriving with and without on-board infectious disease and their management. Resources may include public health professionals from agencies such as the HPA and PCTs. In the case of a serious incident/outbreak PHAs/LAs in consultation with their local HPU may convene an outbreak control meeting.

Serious incidents or large outbreaks require a 'team approach' and the involvement of appropriate experts. If there is concern for the ship's safety, the MCA should be called upon to provide support to the OCG.

The PHA/LA should form agreements/contact groups with relevant agencies to ensure that such support is available as needed, and that up to date contact details and communication channels are maintained. It is advisable that such contacts encourage exchange training of new and current staff at regular periods.

It is recommended that mutual aid agreements should be drawn up between authorities to ensure extra staff are available should they be needed to investigate a large outbreak.

Inspections of vessels must be planned thoroughly and include all areas and procedures relevant to the control and management of incidences of infectious disease and their management. Where there is a lack of familiarity with a vessel, the inspection team may need to be larger to ensure adequate coverage of all systems and areas. A deck/cabin plan of the vessel should be made available in advance of arrival in port.

Investigations of incidents/outbreaks of infectious disease are likely to involve the taking of food and water samples and the submission of faecal samples from affected passengers. The laboratory should be warned as soon as possible if there is likely to be an influx of samples. This will enable the lab to ensure they have sufficient staff and resources to deal with the samples. An appropriate supply of faecal sample containers should be maintained by the PHA/LA.

In the case of food and water samples PHAs/LAs are required to follow appropriate CoP and consider relevant guidance issued by the FSA, the HPA and the HSE.

On receipt of notification of an incident/outbreak, the PHA in consultation with their HPU should request the vessel to arrange for the taking of faecal samples from affected passengers and crew for submission to examination in an on-shore laboratory in order to detect or discount pathogenic organisms. These may be submitted for examination en-route or on return to the UK. In the case of faecal samples submitted in the UK, the PHA/LA should

arrange for the acceptance of the samples to an appropriate HPA laboratory. If samples are to be stored on board until arrival in the UK, guidance should be issued to the vessel as to the appropriate storage conditions.

PHAs/LAs should assist in the preparation of reports and public information documents relevant to the vessel and any infectious disease incident/outbreak including press releases in consultation with their local HPU/MCA office.

In the case of food hygiene inspections, the FSA require that records of inspections are maintained. It is good practice to maintain full and complete records of inspections of all areas and systems inspected, to provide evidence in the event of formal action, to demonstrate inspection activity to the vessel management and in the event of a request for information under the Freedom of Information Act 2005. The Ship inspection protocol developed by the Association of Port Health Authorities (APHA) is accepted by the FSA as a record of inspection. This form is available from APHA or from the LACoRS web site.

6.3 Situations where vessels may not sail

Vessels may only be detained by the Maritime Coastguard Agency (MCA) in accordance with its legal powers to do so.

PHA/LAs should normally expect co-operation from the vessel and its owners with all requirements to secure public health. In the event of non-co-operation, PHAs/LAs may discuss with the MCA whether the MCA should detain the vessel. PHAs/LAs advise MCA that they are satisfied that suitable management controls exist to control the incidence/outbreak of infectious disease. Respective authorities will consider any current agreement/MoU with each other before any vessel is detained.

An outbreak of Norovirus infection is not normally a reason to detain a vessel as long as the vessel management co-operates with the PHA/LA and there is evidence to show that all recommended measures are being taken to control the outbreak and it is clear that there are no other prevailing public health issues.

It is not unusual to observe subsequent Norovirus outbreaks on vessels that have been previously affected. There are numerous hypotheses for this including the introduction of new infected passengers or crew remaining on board incubating the infection.

In some circumstances, the vessel management may elect to postpone or delay an outgoing cruise and/or shorten an incoming cruise to give effect to enhanced cleaning measures and provide time separation between embarking passengers and resident crew. Whilst these circumstances are commercial decisions, the extra time afforded when they are taken has been seen to support controls carried out at sea.

6.4 Summary

- 1) The PHA/LA must have a system of communications in place for a ships master/ port operator to notify them of an illness etc.
- 2) The Ship's Master has a legal obligation to notify the PHA or LA where there is an illness on board a vessel. The earlier the notification the better. It is not necessary to wait for the legal time limits. It is good practice for the master to notify the PHA and the authority in his home port as soon as an incident occurs.
- 3) When a notification is received the PHA or LA will notify the HPA who if necessary will convene an outbreak control meeting.
- 4) The PHA (including OCG) will liaise with the ship's doctor or master and advise on preventative measures, hygiene, sampling etc.
- 5) The PHA will also liaise with the Harbour Authority.
- 6) Before the ship docks the PHA will ensure measures are put in place to prevent transmission from disembarking to embarking passengers.
- 7) The PHA will contact the regional HPA labs to alert them to the facts of the incident and to ensure an adequate supply of sampling equipment is available.
- 8) On docking the PHA will board the vessel and carry out an investigation.
- 9) A food hygiene inspection will be carried out together with sampling in accordance with food law, codes of practice and guidance. Reports will be in the form of the APHA ship inspection protocol.
- 10) In accordance with the Memorandum of Understanding, PHAs and the MCA may discuss whether it is appropriate to detain a vessel. However an outbreak of Norovirus is not normally a reason to detain a vessel unless the owner is not taking action to control the outbreak or some other risk is present.

SECTION 7

Cleaning procedures and agents

7.0 CLEANING PROCEDURES AND AGENTS

7.1 Outbreak control plan and decontamination procedures

Each vessel should have a written outbreak control plan. Before the vessel reaches port, the outbreak control plan detailing decontamination procedures must be forwarded to the PHA. This will enable the PHA to plan and prepare for the inspection and ensure an accurate assessment of the effectiveness of decontamination procedures.

Disinfection procedures should cover all areas, including:

- Restaurants, kitchens
- Bars, lounges
- Showrooms
- Casinos, game rooms etc.
- All passenger and crew public areas
- All passenger and crew cabins and bathrooms
- All public toilets
- All crew toilets

Procedures should include all hand contact surfaces:

- Door handles
- Hand rails
- Lift buttons
- Telephones, keyboards
- Casino chips, cards, slot machines
- Sports equipments etc.

Procedures should cover both indoor and outdoor facilities:

- Gymnasiums
- Swimming pools
- Lounge chairs
- Children's clubs, crèches etc.

7.2 Hand contact surfaces

It is vital that all surfaces handled frequently are thoroughly cleaned and disinfected on an ongoing basis throughout the outbreak and during the vessel's decontamination in port.

The gangway hand rails and all hand contact surfaces should be cleaned and disinfected immediately after passengers have disembarked.

7.3 Vomiting/Diarrhoeal incidents

Any suspicious vomiting/diarrhoeal incidents should be managed by immediately

Section 7

implementing aggressive local disinfection procedures and in particular the following steps are recommended:

- Once reported, the area should be immediately isolated and, if possible closed to avoid any further passenger or crew contact. If vomiting and diarrhoea occurs in an area where open food is displayed then all items should be discarded immediately.
- Any debris of vomit or diarrhoea should be immediately covered with an absorbent gelling powder (designed for spillage of bodily fluids) or if this is not available, disposable paper towels/cloths.
- Utilise specially trained and equipped staff as 'hit squads' for vomiting/diarrhoeal incidents. These trained staff should be used to carry out the cleaning and disinfection of the area, using set procedures and products as well as protective clothing (gloves and aprons etc), which should be disposable, where possible.
- Residuals, used gelling agent, waste cloths etc should be placed in bags which are immediately sealed and preferably incinerated or carefully disposed off to avoid any contamination elsewhere.
- After suitable cleaning and disinfection, the area should remain closed for as long as practical thereafter (ideally overnight), but for at least a minimum of 2 hours after the accident.

7.4 Cleaning and disinfection agents

The shipping company should have available information regarding the contact details of the company which supplies their cleaning and disinfection agents and details of the products being used. They should also have independent testing data from the manufacturer or distributor that supports their efficacy claims against feline calicivirus (FCV) as a surrogate for Norovirus. Testing of disinfectants against Norovirus is currently not feasible therefore FCV is used as a surrogate.

7.5 Detergents

Cleaning using detergent and hot water removes accumulated deposits and reduces the number of micro-organisms from a surface. The detergent selected must be compatible with the subsequent disinfection process because some products can interfere with chemical disinfection. Thorough rinsing is necessary to remove all soil and cleaning agent from surfaces.

Combination low/intermediate level disinfectant-detergent products are sometimes used, although these have been shown to not be as effective if used alone (1). Cleaning with detergent before applying disinfectant has been demonstrated to be the most effective method of eliminating Norovirus contamination.

7.6 Disinfectants

Disinfection reduces the number of organisms to a safe level. The recommended disinfectant for Norovirus is hypochlorite solution at 1000 parts per million (ppm) – 0.1% of available chlorine. Hypochlorite is not generally recommended for disinfecting carpets and soft furnishings as it is damaging to many textiles. There are alternative disinfectants available that have been shown to be effective against Norovirus; these are listed in **section 9**.

7.7 Fogging agents

Fogging should be considered as an adjunct to thorough surface cleaning and disinfection. Anecdotal reports suggest that it may enhance the effectiveness of conventional cleaning and disinfection. Fogging on its own with disinfectants is certainly not an alternative to effective conventional cleaning and disinfection.

7.8 Cleaning equipment

Separate cleaning equipment should be used for toilets, hand wash areas and non-toilet areas. A colour coding system for equipment should be used to achieve this.

All mop heads should be detachable and washable. They should be laundered at 70°C and the mop should then be inverted to dry thoroughly. Mops should not be left in buckets of water. Mop buckets must be cleaned, disinfected and dried between uses. Water should not be left in buckets as this can quickly become contaminated and if used later, can spread the infection within the environment.

Storage areas should be kept clean and tidy so there is no risk of cross contamination from used 'dirty' equipment to clean equipment. All equipment used for cleaning incidents should be disinfected before being returned to storage areas.

Disposable cloths must be used and disposed of immediately after use. Used cloths should be placed in bags and sealed.

All other equipment such as vacuum cleaners, steam cleaners etc. (including detachable tools) must be cleaned and wiped with a disinfectant after use. Change the air filter regularly on vacuums according to manufacturer's instructions.

7.9 Cleaning/Decontamination procedures

7.9.1 Methods

All cleaning activities should be undertaken in a methodical manner following hygienic principles so as not to re-contaminate decontaminated areas. All cleaning activities should be adequately supervised 'in house' with regular inspections to ensure correct procedures

Section 7

are being adhered to and that there is no risk of cross-contamination from 'dirty' to 'clean' areas.

Thorough and continuous cleaning and disinfection should be carried out. Cleaners should target general hand contact surfaces such as hand rails, door handles, toilet flush handles, tap handles, etc. and also where passengers sit or lie down.

Separate teams of cleaning staff should be used to clean known potentially contaminated areas e.g. where there have been previous vomiting accidents in public areas or cabins (there should be records kept of these incidents).

7.9.2 Hard Surfaces

All hard surfaces should be cleaned using a suitable detergent or multipurpose cleaner and then disinfected using either 1000ppm hypochlorite solution or an alternative effective virucidal disinfectant.

Separate disposable cloths must be used for 'dirty' areas such as toilets. After cleaning, bathroom cloths must be placed in sealed bags and disposed off. Staff must not use the same cloths to clean the rest of the accommodation. Damp rather than dry dusting or sweeping should be performed.

During wet cleaning, cleaning solutions and equipment soon become contaminated. Therefore a routine should be adopted that does not redistribute micro-organisms. Cleaning solutions and cloths/mops should be changed frequently. Cleaning solutions should be disposed of to minimize spray and mops disinfected after use.

7.9.3 Soft Furnishings

If items are heat tolerant, after initial cleaning with hot water and detergent, this should be followed by steam cleaning which reaches a minimum of 70°C. If this is not possible, disinfect using a suitable effective virucidal disinfectant. If covers are removable they should be laundered at 70°C.

7.9.4 Carpets

Carpets should be steam cleaned (or steam vacuumed) using a steam cleaner which reaches a minimum of 70°C, unless the floor covering is heat sensitive and/or fabric is bonded to the backing material with glue. If this is the case then use a suitable effective carpet shampoo, ideally with virucidal properties. Carpets should be allowed to dry before any crew or passenger is allowed back into the area.

Vacuum cleaning carpets and buffing floors have the potential to re-circulate Norovirus and are therefore not recommended. If vacuum cleaners are used in decontaminated areas they should contain high efficiency particulate air (HEPA) filters which are regularly cleaned and disinfected.

7.9.5 Laundry

Laundry from affected persons must be kept separate from all other laundry. All laundry items from affected rooms should be placed separately in water soluble bags before transfer

Section 7

to the laundry. All dirty linen should be bagged at the site of collection. During the transfer of laundry bags, there must be no risk of cross contamination en route.

Water soluble bags should be used for all instances of gross contamination. If linen is soiled with body substances e.g. faeces, it should be washed separately, with a pre-wash sluice cycle. All soiled linen should be washed as promptly as possible. Alternatively, heavily soiled linen should be disposed of in a sealed bag. This must comply with waste disposal regulations and PHA arrangements.

If an external laundry service is used, procedures should ensure operators are informed of the likelihood of contaminated bedding, etc and any special requirements for the receipt of such items must be identified.

Fabrics which can tolerate it should be washed at a minimum temperature of 70°C. This should be attained for at least three minutes: other fabrics may be disinfected by the addition of sodium hypochlorite to the penultimate rinse. This should be of at least five minutes' duration, at a concentration of at least 150ppm of chlorine.

Separate linen carts should be used for dirty and clean linens. Carts used to transport soiled linens should be cleaned and disinfected after each use.

On change-over, affected accommodation must be thoroughly cleaned and sanitised prior to clean laundry being brought into the room.

7.9.6 Precautions to be taken by cleaning staff

Precautionary measures should be taken by housekeeping personnel. Disposable personal protective equipment must be used, including gloves and aprons. These should be changed after each cabin. Hands must be thoroughly washed and dried before entering the next cabin.

7.10 Food and beverage procedures

Cleaning and disinfection of all dining areas and bar seating areas including table-tops, chair-arms, hand rails, equipment buttons, handles and any other hand contact surfaces should be carried out on a continual basis.

Galleys and pantries should be similarly cleaned using a safe and effective disinfectant. All food must be protected to prevent any risk of contamination.

All food service personnel must frequently wash their hands and protect food effectively. This should be carefully supervised and checked.

Other precautions include ensuring separation of clean and dirty tableware, discarding all displayed food at the end of service, changing tongs and utensils regularly and ensuring passengers do not return to buffets and reuse dirty tableware.

Section 7

7.11 Air systems

Air handling units and evaporative condensers should be inspected to check there are no faults. Any damaged or worn filters should be replaced and supplementary cleaning and disinfection is recommended.

Ventilation, including any air conditioning system, should be set at the maximum level for the introduction of outside air and the minimum level of re-circulation.

7.12 Public toilets

Public toilet facilities throughout the vessel should be checked every hour and cleaned as appropriate. They must be thoroughly cleaned and disinfected at least 4 times a day, and more if possible. The disinfectant recommended is 1000ppm hypochlorite solution.

All hard surfaces must be cleaned and disinfected ensuring that separate disposable cloths are used for 'dirty' areas such as toilet bowls. All dirty cloths should be disposed of in sealed bags.

7.13 Children's clubs/creches

Particular attention should be taken in the cleaning of children's play clubs. Uncontrolled vomiting and diarrhoea is more likely in young children and therefore the play area and toys may be heavily contaminated. All the area and contents should be cleaned and disinfected daily and immediately after an incident of vomiting and diarrhoea. Toys in children's clubs should be capable of withstanding disinfection. Ball pits/pens should be cleaned and disinfected. The disinfectant recommended is 1000ppm hypochlorite solution.

Tables and highchairs should be cleaned and disinfected. Nappy changing areas, toilets and hand washing facilities should be thoroughly cleaned and disinfected in all cases. The disinfectant recommended is 1000ppm hypochlorite solution.

Blankets, sheets, pillow cases should be laundered at 70°C as described above. If a hot wash is not possible, fabrics may be disinfected by the addition of sodium hypochlorite to the penultimate rinse. This should be of at least five minutes' duration, at a concentration of at least 150ppm of chlorine as described above.

7.14 Passenger and crew cabins

Beds should be stripped and whilst in the cabin all linen and pillowcases should be placed in the laundry bags. If the linen is heavily contaminated, the use of dissolvable bags is advised. Soiled linens should be handled as little as possible and with minimal agitation. The linen bags should be removed to laundry ensuring there is no risk of cross contamination

Section 7

en route. Clean linen should not be taken into an affected room before it has been decontaminated.

Any beverage sachets such as coffee, tea, sugar, biscuits etc. should be disposed of. All cutlery, crockery and glasses should be placed in a lidded container to be washed and disinfected using a dishwasher at a temperature of at least 70°C.

All toilet rolls and other toiletries should be replaced and the partly used materials disposed of. The holders should be cleaned and disinfected as per **7.9.2**

All soft furnishings, i.e. chairs, stools, beds, upholstery, headboards must be cleaned and disinfected as per **7.9.3**

All hard surfaces, i.e. chair and table legs, window frames, dressing table, bedside tables, TVs and units, door knobs, wardrobes, handles, inside drawers and wardrobes, headboards, all bathroom fittings, handles, towel rails, waste bins, etc. must be cleaned and disinfected as per **7.9.2**

All carpet areas must be cleaned and disinfected as per **7.9.4**

The bed can be made up and towels, soap etc. put in the cabin. The exception being if cabin is to be fogged, this should be delayed until completed.

7.15 Fogging procedure

If fogging is being undertaken, it should be done after the cabin has been thoroughly cleaned as per **7.14**

Fogging must take place before changing linen (prior to clean linen being taken into the room) and before crockery and beverages are replaced.

If there are any open-able windows they must be closed during fogging operations. Air conditioning unit should be disabled. Wardrobe doors and all drawers should be opened. The door to the bathroom should be opened and fire alarms and smoke/heat detectors covered.

The person operating the unit should methodically work backwards from the furthest point from the door aiming the fogging generator upwards ensuring all surfaces are covered with a light vapour. The operator should aim the fogging generator into any cupboards, bathroom and under beds.

The door should be closed and left as per manufacturers instructions; this is usually for 45-60 minutes. The room should then be re-entered and all hard surfaces wiped with a multi purpose cleaner. Fire alarms and smoke/heat detectors should be uncovered.

SECTION 8

Specialist cleaning contractors

8.0 SPECIALIST CLEANING CONTRACTORS

Where contractors are being brought in to assist with the decontamination in port, shipping companies must be able to demonstrate that they have checked their protocols/procedures and training. As highlighted in section **7.4**, there should be available information on the company who supplies their cleaning and disinfection agents. They should also have independent testing data from the manufacturer or distributor that supports their efficacy claims against FCV/Norovirus.

The use of contractors should be specified in the ship's turnaround decontamination plan. It should specify the timings, who does the work, and the methods and types of cleaning and disinfection. It should demonstrate that there will be no risk of cross-contamination from 'dirty' to 'clean' areas.

SECTION 9

Disinfectant agents

9.0 DISINFECTANT AGENTS

When it comes to disinfecting surfaces, sodium hypochlorite remains the ‘gold standard’. However, the problem for cruise ships is that there are sensitive environmental surfaces such as carpets and furnishings that could be damaged by hypochlorite. Other disinfectant agents have been developed that are less damaging to furnishings and are now commonly used by the cruise ship industry.

Shipping companies should request independent testing data from the manufacturer or distributor of the disinfectant that supports their efficacy against Norovirus. As Norovirus cannot be grown in culture, efficacy testing of disinfectant is done using a surrogate virus, typically the FCV a similar non-enveloped single stranded RNA virus. A Log₁₀ reduction of 4 (99.99%) or greater is considered adequate for FCV/Norovirus disinfection.

Disinfectant products usually have both pluses and minuses, for example, some very effective products against Norovirus have drawbacks such as being toxic or irritant to humans. Where as some non-toxic products require very long contact times on environmental surfaces to be fully effective against Norovirus.

9.1 Characteristics of an effective disinfectant

In order to be effective, a disinfectant must:

- **Provide a broad spectrum of proven activity:**
Different micro organisms vary considerably in their sensitivity/resistance to disinfectants. With regard to viruses, resistance varies between non-enveloped (hydrophilic) and enveloped (lipophilic). The disinfectant therefore must have the necessary spectrum of activity to be effective against Norovirus (non-enveloped).
- **Demonstrate a reduction in viable organisms for which it comes into contact:**
Bacteria – a 5 log (or greater) reduction in viable count is the recognised standard required.
Viruses – a 4 log (or greater) reduction in titre is the recognised standard required.
- **Work in a broad temperature range:**
Generally speaking, the activity of disinfectants increases with temperature. The temperature range the disinfectants are tested in will assist in determining their efficacy for the required cleaning regimes.
- **Work in a variety of pH conditions:**
The performance of disinfectants can be affected considerably by pH, e.g. hypochlorite works best under acidic conditions while glutaraldehyde work best under alkaline conditions. Extraneous material present on environmental surfaces may affect the pH conditions in which the disinfectant will be expected to perform.

- **Work in the presence of organic material:**

The activity of most disinfectants is reduced in the presence of organic material due to inactivation, absorption or simply due to the presence of a physical barrier. Hypochlorite and formaldehyde are particularly susceptible to inactivation. Testing should indicate if the disinfectant has been tested in the presence of organic materials.

- **Be easy to mix in the proper concentration:**

Using the correct concentration is very important. Too high a concentration may be very toxic. Too low a concentration will not work. It is critical that disinfectant solutions be prepared accurately. Therefore it is essential that the disinfectant used can be easily prepared at the right concentration. The product instructions must be clear and staff must be aware of how to prepare correct dilutions.

- **Work within a reasonable contact time:**

All disinfectants need time to work. A surface disinfectant will not work if it is rinsed off or dries out before the required contact time is up. Staff need to know the contact time for the disinfectant being used and adhere to it. If it is not realistic in practice then an alternative disinfectant with shorter contact time should be used.

- **Be safe to use:**

Information on health effects of the disinfectant must be available. For example, chlorine dioxide is a strong irritant; phenols are potentially toxic to various organ systems and therefore should only be used under strictly controlled conditions.

- **Meet all the disinfectant needs of the facility:**

Ideally, a disinfectant should be able to be used on all surfaces in all areas of the vessel.

9.2 Effective and ineffective disinfectant products

As previously mentioned, testing of disinfectants against Norovirus is currently not feasible because these viruses cannot be grown in tissue culture. Therefore FCV has been used as a surrogate for Norovirus in many studies.

Quaternary ammonium compounds (QUAT) are often used in disinfectant products, most quaternary ammonium compounds act by disrupting viral envelopes, but as noroviruses are non-enveloped they do not have significant activity against them^(4, 6, 7). However, a QUAT based disinfectant which has been proven to be effective against feline calicivirus (FCV) is Formulation R-82 produced by Lonza⁽⁹⁾ and incorporated in a number of products in the United States. This product has received a US Environmental Protection Agency approved claim against FCV. A similar disinfectant 'Formulation DR-25a' has been developed by Lonza for the European market.

Alcohol based disinfectants are generally not very effective against non-enveloped viruses such as Norovirus/FCV.⁽³⁾ Their use as a surface disinfectant is therefore not recommended, however, some alcohol-based hand disinfectants may be of use as an adjunct to hand washing, see section 10.

Iodine-based disinfectant has been shown to be very effective at inactivating FCV, but it has the disadvantage of discolouring treated surfaces (3).

Glutaraldehyde based disinfectants have been reported to inactivate FCV (3). Phenol-based disinfectants have also been shown to be effective against FCV in the laboratory (5). Both phenol and glutaraldehyde based disinfectants have potential toxicity and are of limited practical use.

High concentrations of sodium hypochlorite (1000ppm) have been shown to be effective against FCV. However, pre-reconstituted hypochlorite was found to be less effective than the freshly reconstituted granular form. Pre-reconstituted form required a concentration of 5000ppm to completely inactivate the virus (3). Hypochlorite solutions lose effectiveness on standing therefore freshly reconstituted solutions are essential in outbreak settings.

The per-oxygen compound Virkon-S® has a US EPA approved claim against FCV. It contains potassium peroxymonosulphate and other active ingredients which work synergistically to attack the key structures within the virus. It has been demonstrated to not be inactivated by organic challenge (2).

Accelerated hydrogen peroxide™ has been reported as being an effective disinfectant against FCV (5).

Chlorine Dioxide has been shown to be effective disinfectant against FCV with a contact time of 10 minutes (4) however, chlorine dioxide is quite unstable. Cryocide 20™, a product containing stabilised chlorine dioxide and a twin chained QUAT, has been shown to have effective virucidal activity against FCV after a contact time of 30mins.

Summary of commonly used disinfectants against feline calicivirus (as a surrogate for Norovirus)

This is not an exhaustive list and there may be other brands on the market which are suitable for the purpose. However, currently these may not be supported by published scientific evidence. When such data is produced this will include additional products and a revision will be produced from time to time.

Product Name	Manufacturer	Main active ingredient	Contact time	Log ₁₀ reduction*	Effects to health
Accelerated Hydrogen Peroxide™	Virox technologies	0.5% hydrogen peroxide	5 mins	3.68 (@1:16 dilution)	Non-toxic
Sodium Hypochlorite	Generic	0.1% sodium hypochlorite	1 min	>4.0	Irritant
Cryocide 20™	R.P Adam	0.75% stabilized chlorine Dioxide and QUAT	30mins	>4.0	Irritant
Mikro-Bac® III	Ecolab	5.32% o-benzyl-p-chlorophenol 3.55% o-phenylphenol	10 mins	>4.0 (@1:128 dilution)	Corrosive, Harmful
Virkon®	Antec International	21.45% peroxomonosulphate	10 mins	>4.0	Non-toxic
Newgenn High Level Disinfectant	Newgenn Research Ltd	<5% QUAT, <0.5% buffers	1 min	3.3 (@1:100 dilution)	Non-toxic

*Log₁₀ reduction is taken from either published research papers or from efficacy testing undertaken on behalf of the manufacturer.

N.B: The use of trade names and commercial sources is for information purposes only and does not constitute endorsement by HPA, APHA or MCA.

SECTION 10

Hand hygiene

10.0 HAND HYGIENE

10.1 Hand washing with soap and water

Norovirus can remain viable on hands for hours thereby giving hands the potential to spread the infection both directly and indirectly. Hand washing is therefore the single most important procedure for preventing the spread of infection.

Hand washing with soap and water should be promoted, and sufficient hand washing stations should be strategically placed around the vessel to enable passengers to wash their hands, for example before eating. Where possible, non hand operable taps and soap dispensers should be provided to help prevent re-contaminating clean hands.

Passengers and crew should be provided with instructions for proper hand hygiene. These should include instructions to turn taps off using disposable paper towels, where taps are hand operable, to prevent re-contaminating clean hands.

10.2 Disinfection with alcohol hand rubs/gels

In outbreaks hand gels/rubs should be considered as an adjunct to hand washing and NOT a replacement.

Alcohol-based hand rubs are generally very effective against bacteria and enveloped viruses, providing an overall 3-4 \log_{10} (99.99%) reduction. However non-enveloped viruses, such as Norovirus are more resistant and are typically only reduced by 1-2 \log_{10} (90-99%) with a 30 second contact time. A product providing less than 2 \log_{10} (99%) is not considered an effective hand disinfectant.

Alcohol-based hand sanitisers can contain various alcohol combinations and concentrations. Studies have shown that ethanol is more effective against FCV than propanol, and it has also been shown that higher ethanol concentrations in commercially available hand rubs is associated with better efficacy against FCV. Generally only very high concentrations of ethanol can reduce FCV by $>2 \log_{10}$ (99%) after 30 seconds (¹²). **See table 1**

Other studies have shown isopropanol at 50-70% to be effective against FCV (^{10, 11}).

Recent studies have found that a new synergistic formulation (*Manorapid synergy*[®]) with reduced ethanol content (55%) in combination with 10% propan-1-ol, 5.9% propan-1,2-diol, 5.7% butan-1,3-diol and 0.7% phosphoric acid produced a reduction factor of 2.38 \log_{10} after 30 seconds against FCV (¹³). **See table 2**

Table 1 – Summary of results in study by Kampf *et al J hosp infect* 2005;60; 144

Substance	Reduction of feline calicivirus (FCV) Log ₁₀ reduction factor after 30 seconds
95% ethanol	2.17
80% ethanol	1.25
75% ethanol	1.07
70% propan-1-ol	0.95-1.09

Table 2 – Summary of results in study by Kramer *et al J hosp infect* 2006; 62:98

Substance	Reduction of feline calicivirus (FCV) Log ₁₀ reduction factor after 30 seconds
Synergistic formulation	2.38
70% ethanol	0.68
70% propan-1-ol	0.70
Standard Hard Water	1.39

N.B. Both studies referred to in table 1 and 2 used the same standard test method ASTM E 1838-02 which uses a finger pad method.

Knowing the active ingredients of hand rubs is therefore crucial when determining their effectiveness against Norovirus. The shipping company should have information from the manufacturer or distributor that supports their efficacy claims against FCV/Norovirus.

11.1 EMBARKATION AND DISEMBARKATION

Where there has been, or there is a continuing outbreak of illness on board a vessel every effort should be made to separate passengers leaving the vessel and those about to board. It may be necessary to use separate halls or movable barriers to prevent cross contamination. If both sets of passengers have to use the same area it should be effectively cleaned and disinfected after disembarking passengers have left and before embarking passengers arrive.

The port operator should be informed of the situation by the shipping company in advance of the ship docking so extra cleaning staff can be available to deal with incidents of diarrhoea and vomiting and disinfection of waiting/boarding areas as well as toilets and washrooms.

Disinfection should be carried out in accordance with the details above using the same disinfectants/strengths as recommended.

Where people are congregating, toilets, compartments and wash rooms should be thoroughly cleaned and disinfected frequently (at least hourly). Cleaning and disinfection should be carried out in accordance with the details above.

Potable water should be readily available, especially in areas where queues are likely to develop, to prevent any passenger becoming dehydrated. Taps in toilet areas should be labelled “Not drinking water”.

11.2 Onward travel

Some passengers may not be well enough for onward travel, although not ill enough to require hospitalisation. It has been shown to be effective for tour companies to arrange with specified hotels for sick passengers to be accommodated until recovery. Cruise operators should ensure any hotels used are capable of dealing with the patient and avoid risk to other occupants.

Passengers suffering from Norovirus are recommended not to fly. Often airlines will not accept passengers displaying symptoms.

Cruise operators must ensure that any transport operator, such as a coach or taxi firm, picking up passengers who may be ill, are aware of the problem and have received information regarding the steps necessary to prevent spread of infection and to clean and disinfect vehicles.

11.3 Transport operators

Coach operators must be made aware of the occurrence of illness and have the knowledge and facilities available to clean their vehicles as described within this document.

Section 11

The responsibility for cleaning transport must be defined prior to any outbreak, as there may be an overlap between the transport operator and the accommodation management.

The driver should deal with gross contamination in the coach as soon as it is practical. This means the driver must be equipped with appropriate personal protective kit and cleaning materials. Further cleaning and disinfection will be required on arrival and the clean up team may carry this out.

Equipment for Driver

The following equipment must be kept on the bus at all times:

- Adequate supply of water for cleaning.
- Rubber gloves.
- Disposable aprons.
- Disposable foot covers.
- Dustbin bags in a distinctive colour.
- Sick bags.
- Disinfectant.
- Multi-purpose detergent cleaner.
- Absorbent granules.
- Disposable cloths.
- Mop, bucket, dustpan and plastic scraper.

Immediate Action

Incidents of vomiting and diarrhoea should be cleaned up as soon as possible. Passengers should be taken off the bus if it is practical and safe to do so.

- Put on disposable apron, foot covers and gloves.
- Gross contamination of vomit and/or diarrhoea should be removed by:
 - treatment with absorbent granules, which are then removed for proper disposal.
 - using paper towels to soak up excess liquid then using disposable cloths.
- Place contaminated material directly into a waste bag.
- Wash immediate area with hot water and detergent using disposable cloths.
- After cleaning, apply disinfectant agent directly to the contaminated area and its surrounds, at least 3 metres in all directions.
- Dispose off aprons, foot covers, gloves and cloths into the waste bag.
- Wash hands thoroughly afterwards.
- Cordon off and thoroughly air the area for at least one hour afterwards if practical to do so.
- Isolate air conditioning system and do not reintroduce until the coach has been cleaned following return to the base/destination.

On return to base/destination

- The transport operator should notify the person in charge of the occurrence of illness on board his/her vehicle and the action taken.
- The transport operator or clean up team should then carry out a full clean.
- Remove any contaminated material for proper disposal.
- Dispose of consumables e.g. paper cups etc.
- Remove seat head rest covers, cushions, etc and launder at 70⁰C.
- Clean and disinfect hard and soft furnishings with the appropriate cleaner/disinfectant including toilets, washbasins, door and toilet flush handles, floors and windows.
- Steam clean contaminated cloth seats – if heat tolerant.
- Clean accessible carpeted areas with a wet and dry vacuum cleaner containing detergent and warm water solution.
- The vehicle should be well vented after cleaning and disinfection is complete.
- Clean and disinfect non-disposable equipment.
- Replenish supplies.

ANNEX D

NOROVIRUS – GUIDE FOR COACHES AND THIRD PARTY PREMISES

What is Norovirus?

Norovirus (NV) sometimes called Small Round Structured Virus (SRSV), Norwalk-like virus (NLV) or winter vomiting is a frequent cause of diarrhoea and vomiting in the community. It is common all year round, particularly where people are in close proximity e.g., hospitals, hotels and coaches.

Why is it a problem?

Norovirus lasts 12-72 hours and the person will have vomiting, which, on occasion, is projectile and/or diarrhoea. It may also result in fever, headaches and aching limbs. The illness is usually mild. Norovirus spreads very easily where there is close contact or people are in a confined environment including coaches. Large numbers of people can be involved. To stop the illness spreading, it is important to be aware of the virus and to take control measures to minimise its spread to guests and to staff.

Controls

Any person identified with symptoms will be unable to join other guests for meals and other communal activities including coach trips. However, there may be instances where a person becomes unwell on a coach. There are steps that you can take to minimise any spread:

- Discuss your company policy with your manager at the start of the season and do not wait until an outbreak occurs.
- Stop the coach as soon as it is practical to do so.
- Consult and implement your company's policy for dealing with customers that become unwell. This may include, where possible, isolating the ill person on the coach, making alternative arrangements for transporting the ill person or advising them to go to their room.
- If safe to do so, ask others to leave the coach or area until the faeces /vomit has been cleaned.
- If you have to undertake the cleaning, use the materials provided by your company or hotel chain, follow their cleaning procedures and wear the protective clothing. This will provide surface cleaning and disinfection.
- Bag soiled material and dispose.
- Wash your hands thoroughly after cleaning up.
- Advise the destinations of the incident.
- Ventilate the area well. If on a coach, do not re-circulate the air.
- If travelling onwards, advise others that if they feel unwell to speak to you. This will allow you to deal with any further incidents or to advise management in other premises (e.g. lunch stops etc).

Will they need treatment?

Ill people should be advised to drink plenty of fluids. If the illness is prolonged or if they are on regular treatment requiring medical supervision, they may wish to contact a General Practitioner (GP).

What do you need to do?

You need to be aware of the ease of spread of the Norovirus and be able to deal with incidents. The cleaning procedures advocated should be used in all cases of diarrhoea and vomiting, as they will assist in preventing further spread.

In addition, if you are experiencing symptoms please advise your own line manager of this.

For further advice contact your manager, or the Local Authority Environmental Health Department.

SECTION 12

Agency roles and communications

12.0 ROLES AND COMMUNICATIONS

12.1 Roles

Public Health (England & Wales)

12.1.1 Health Protection Agency (HPA)

The HPA is an independent body dedicated to protecting the health and well-being of the population in England. The HPA's role is to provide an integrated approach to protecting UK public health through the provision of support and advice to the National Health Service (NHS), local authorities, emergency services, other “arms length bodies” and the DH and the devolved administrations.

The Agency was established as a special health authority (SpHA) in 2003. On 1 April 2005 the Agency was established as a non-departmental public body, replacing the HPA SpHA and the National Radiological Protection Board (NRPB), with radiation protection as part of health protection incorporated in its remit. The Agency has recently been given lead responsibility for co-ordinating the responses when there are threats to human health in ports and airports and for ensuring that arrangements are in place to avoid such threats.

Following a review of arrangements at ports, airports and international train stations completed in March 2006, the HPA has agreed to take the overall operational lead in ensuring that there is appropriate human health input into arrangements for Port Health.

12.1.2 Port Medical Officer/Consultant Communicable Disease Control (CCDC)

The dedicated Port Health Medical Officer for most ports in England is a CCDC. The Port Medical Officer has lead responsibility for ensuring that arrangements are in place to implement the Public Health (Ships) Regulations 1979.

The statutory basis for providing staff to Local Authorities (LA) is Section 4(i) (f) of the HPA Act 2004 (for the HPA), and by section 26 of the NHS Act 1977. Within the local authority context of preparedness it is appropriate that a ‘Proper Officer’ should be formally appointed under the requirements of the Public Health (Control of Disease) Act 1984 provisions.

Normally the ‘proper officer’ will be a CCDC, and the appropriate control powers should be formally delegated to that person. These arrangements may change in the future as a result of the review of current legislation.

12.1.3 Port Health Authorities (PHAs)

PHAs are constituted under public health legislation. PHA functions are also carried out by local authorities. Port Health Officers (PHOs) inspect ships generally using the same legislation and carrying out the same tasks as detailed under Public Health Scotland.

PHAs and LAs with port health functions will become activated and involved if an infectious disease outbreak involves shipping.

In these instances, PHAs and LAs with port health responsibilities will meet ships on arrival.

They will access the health impact of any incident and liaise with the CCDC, who then will mobilise the appropriate level of response.

12.1.4 Other Key Partners

Primary Care Trusts, local authorities and shipping companies.

Public Health (Scotland)

12.1.5 Health Protection Scotland (HPS)

HPS works in partnership with NHS Scotland Boards. They also ensure a consistent approach is applied in the delivery of health protection and audit national health (NH) boards accordingly. HPS provides expert medical advice and support to NHS Boards and will be consulted by them in the event of Norovirus outbreaks. In the event of an outbreak extending beyond a single NH Board area, HPS will generally adopt the lead role.

12.1.6 NH Boards (15 No)

All aspects of management and control ultimately remain at local (Board) level.

NHS Board Consultants in Public Health Medicine (CPHM) may therefore vary their approach to routine investigations and monitoring of Norovirus outbreaks. In many instances this key role is the responsibility of the Public Health Infection Control Nurses (PHICNs). The CPHM will generally involve HPS for specific expert advice.

12.1.7 Consultant in Public Health Medicine

The CPHM shares with the PHICN and Environmental Health Officer (EHO) the responsibility for the control of communicable disease. In particular they:

- Co-ordinate responses to large outbreaks
- Advise on infection control measures
- Consider and document the epidemiology of cases
- Ensure stool samples are submitted as soon as possible and to make the necessary arrangements for their analysis
- Ensure that appropriate medical care is available for patients and those displaying symptoms.

12.1.8 Infection Control Nurse

In the event of outbreaks they may undertake a similar role to that of the CPHM with particular emphasis on the provision of advice on infection control measures.

12.1.9 Local Authorities with Port Health responsibilities

EHOs inspect ships in accordance with the Public Health (Ships) Regulations 1979, Food Hygiene Regulations 2006 and (Temperature Control) Regulations 1995. EHOs share with the CPHM and the PHICN the responsibility for the control of communicable disease and in particular they:

- Investigate the origin and cause of illness
- Take specimens and samples for analysis
- Carry out a ship inspection
- Interview staff and passengers
- Advise on good hygiene practices
- Advise on control strategies
- Implement outbreak control measures
- Co-ordinate control plans
- Consider the potential for formal action in the event of food being identified as the source
- Prepare “after the event” reports for discussion and implementation of the lessons learned
- Advise on preventive measures.

Public Health (Northern Ireland)

The Port Health Infectious Disease system in N. Ireland is different from the rest of Great Britain. At the reorganisation of Local Government in NI in 1972, infectious diseases (ID) control at Ports and Airports was passed to the newly formed Area Health Boards, in the case of Belfast the Eastern Health & Social Services Board (The Health and Personal Social Services – Northern Ireland) Order 1972 and the Establishment and Determination of Areas of Health and Social Services Boards Order 1972).

Each Health and Social Services Board has a Department of Public Health Medicine led by a Director of Public Health with a Consultant in Communicable Disease Control (CCDC) responsible for the surveillance, investigation and control of communicable diseases. A Public Health doctor is on call 24/7 for ID issues.

In 1972 it was agreed that The Eastern Health and Social Services Board acting with Belfast City Council would be responsible through a team of Doctors and Port Health Officers for the enforcement of the Public Health (Ships) and the Public Health (Aircraft) Regulations (NI) 1971 at the Port of Belfast (including Belfast City Airport and the waters of Belfast Lough) and that when acting in this capacity these Authorities would be known as The Belfast Port Health Authority. Port Health Officers of Belfast City Council were authorised by the Eastern Health and Social Services Board to act as Authorised Officers of the Board to enforce the regulations. Similar agreements were made by the other Area Boards and the relevant LAs with Ports/Airports within their boundaries.

12.1.10 Maritime & Coastguard Agency (MCA)

The MCA is the UK Maritime Authority. It is an Executive Agency of the Department for Transport and has statutory responsibility to enforce safety standards aboard UK vessels and other vessels visiting UK ports in accordance with merchant shipping legislation. Vessels are inspected according to an agreed regime and take account of the health and safety of all persons aboard a vessel. In certain circumstances ships may be detained. In the event of

an outbreak of illness the MCA and public health clinical experts and local public health authorities will discuss appropriate action.

12.2 Communications

Ships' Masters are required to notify the PHA at the port of expected arrival, of any suspected infectious disease or death on board other than by an accident. The Public Health (Ships) Regulations requires Masters to complete and submit a maritime declaration of health in such an event.

If the report suggests an outbreak of a reportable illness according to the International Health regulations, the port health office will inform the designated contact at the HPA, or local Health Board, normally the CCDC or CPHM.

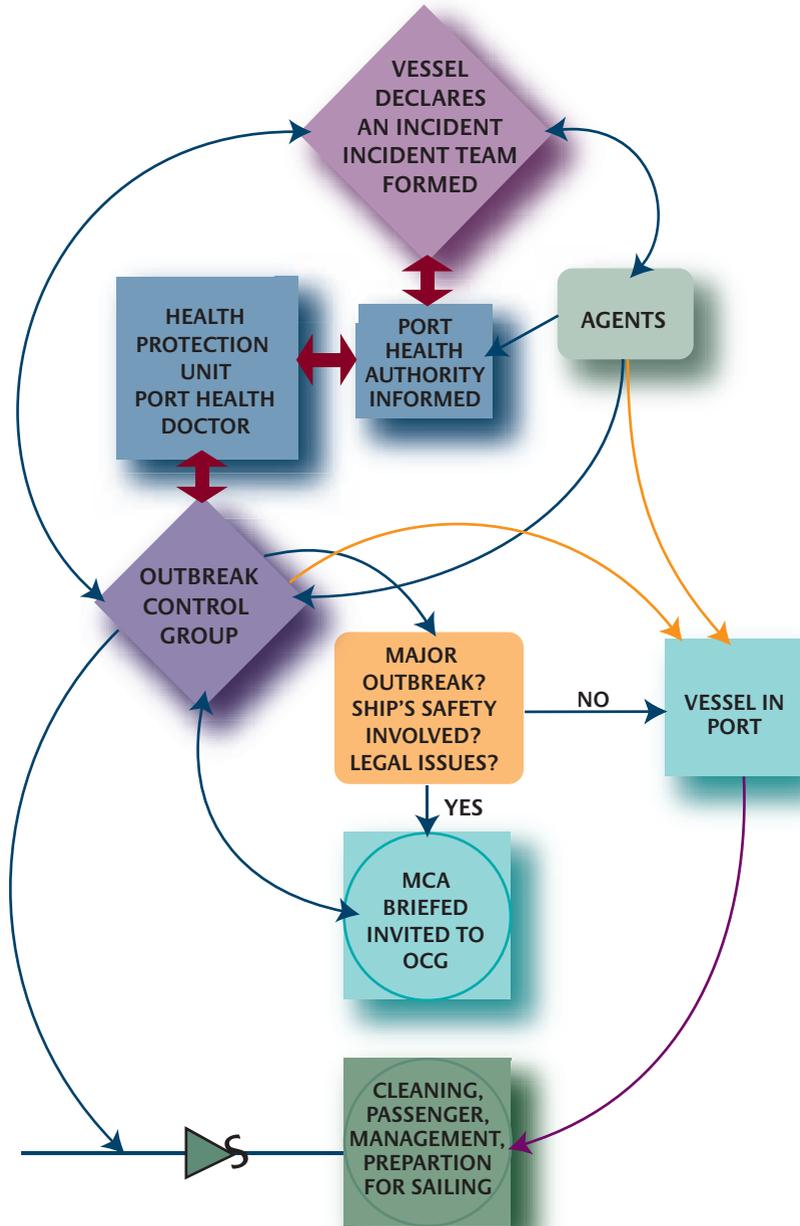
The port health office will advise the ship about the actions that should be taken and indicate health officers will board the vessel on arrival to carry out an inspection/investigation to assess the health impact and mobilise the appropriate level of response.

In large outbreaks the response is co-ordinated by an Outbreak Control Group (OCG) which is formed, managed and controlled at HPA or Health Board level according to the location of the outbreak. Members of the OCG will include the relevant clinical experts and enforcement officers. In England the CCDC has the lead responsibility. In Scotland, the CPHM shares the responsibility.

If there is concern about the safety of the vessel then the MCA should be informed. Any risk assessment should consider the safety of the vessel in relation to safe manning and illness amongst key crew members with critical safety duties; and in the event of an emergency situation, the extra burden placed on the crew, having to deal with numbers of passengers suffering from Norovirus.

Information about all outbreaks should be sent to the HPA, Centre for Infections.

Summary of action for Norovirus incident



12.3 Inspection/Enforcement process

This process is intended to provide a general guide on roles and responsibilities. Variations may be applied at local levels due to certain circumstances or to take account of devolved administrations for example.

Port Health would normally carry out initial inspection/investigation to assess the health impact and report their findings to the CCDC. The CCDC may then decide to form an OCG to deal with the incident.

The OCG will agree remedial action which should be in accordance with current guidelines.

Port Health and/or MCA enforcement officers and/or any other designated member of the Group may be used to convey agreed control measures and enforcement action if appropriate.

It is important to follow-up inspection(s) using available expertise to ensure that remedial actions are taken.

Monitoring arrangements may require liaising with another port health or local authority and MCA marine office to take account of the ship's scheduled cruises.

12.4 Working in partnership

The Health Protection Agency and the Maritime & Coastguard Agency will exercise their corporate responsibilities and actively collaborate and share intelligence and protocols with each other and other interested parties such as Health Boards and Ship Operators as appropriate.

The Association of Port Health Authorities will help to co-ordinate actions with member authorities.

It is essential to ensure that nationally there are clear communication links between operators, ship agents and lead authorities. This sub-group therefore commends the idea to the national working party.

12.5 Means for capturing data

Currently there is no national model to capture, store and retrieve systematic data on Norovirus outbreaks aboard ships. Routine data collection of incidents as a process is not well defined. Information is collected and retained locally. There is no agreed format that would enable such information to be shared in a meaningful way. This became evident when the communication sub-group attempted to gather data to help the Norovirus working party on outbreaks within the industry and local authorities earlier this year.

In the absence of a defined mechanism, the sub group took the opportunity to create and circulate an “Outbreak of Communicable Disease Questionnaire” that would enable the capture of information on current best practice at ports of entry to the UK. This was sent to port and local authorities in England and Wales and the completed returned responses provide some indication of the level of preparedness or otherwise at ports for the management of outbreaks of communicable disease. It also provided a means to receive specific information in connection with the new International Health Regulations. A copy of the questionnaire is attached at **Annex 2**.

It is recommended that the key agencies collaborate to develop a national database for Norovirus outbreaks. The mechanism for this should be considered by the key agencies.

12.6 Sharing data about Norovirus hotspots with other countries

Following the establishment of a reliable mechanism to capture relevant data we would endorse the notion of all key agencies using their influence to encourage their opposite number in other countries to share information with the UK focal point. The UK focal point should liaise with the WHO, if appropriate.

12.7 Sharing with industry

The HPA are aware of a number of useful links with other bodies but it is endeavouring to further establish contact with other agencies, particularly the cruise industry.

12.8 Feedback system

Consideration to be given to developing a network to enable access to the database once it has been established.

ANNEX E

Outbreak of Communicable Disease Questionnaire

As part of the information gathering exercise, PHAs and LAs dealing with port health matters were contacted and asked to fill in the following form.

One of the outcomes of this exercise was to highlight the need for a better registration of contact addresses and telephone numbers and this was particularly evident with the smaller PHAs. The returns are currently being processed and there is an important issue regarding such data and the need for some central collection and database management. Currently this function is not addressed but the need for a competent custodian of such data will be a recommendation of this report.

4. If an airport, do you have a designated medical examination facility? Yes No

Can this facility be used to, isolate? Yes No

treat cases of infectious disease? Yes No

If No, what provision do you have for isolation and treatment of infectious cases?

5. If an airport please supply the following information (*in addition to question 4*):

	Approx number per annum	
	Aircraft	Passengers
Aircraft arriving from abroad		
Aircraft originating from UK		
Cargo flights from abroad		
Cargo flights originating from UK		

6. Who would you contact for communicable disease advice?

7. For the management of an outbreak of communicable disease, do you have a current: Policy? Yes No

Date:

Protocol? Yes No

Date:

Guideline? Yes No

Date:

If 'Yes', would you be kind enough to include (either electronically or by post) a copy of the document when returning the completed questionnaire.

If 'No', what mechanism is in place within your port for the management of an outbreak of communicable disease?

8. What definition of an outbreak of communicable disease do you use?

9. What would alert you to the possibility of a potential outbreak of communicable disease onboard a vessel/aircraft?

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July 2007

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