



衛生防護中心
Centre for Health Protection

Centre for Health Protection
Scientific Committee on Enteric Infections and Foodborne
Diseases

Strategies for Norovirus Prevention and Control

Purpose

This paper is developed by the Working Group on Norovirus Prevention of the Scientific Committee on Enteric Infections and Foodborne Diseases based on the local epidemiology and control presented in the SCEIFD paper entitled “Situations, prevention and control of norovirus outbreaks in Hong Kong” (finalized in September 2005).

Background and Guiding Principles

2. Norovirus is emerging as the leading cause of viral gastroenteritis in people of all ages worldwide. It is highly infectious and can cause significant secondary spread of infection within close communities.

3. Commonly known as the “winter vomiting disease”, norovirus infection is characterized by high incidence of vomiting, and occurs predominantly during the winter season. However summer outbreaks are also noted. Two major modes of transmission have been described for norovirus outbreaks.

- (a) Foodborne outbreaks involving consumption of contaminated food;
- (b) Person-to-person transmission is often implicated in outbreaks occurring at health care and institutional settings such as elderly homes, nurseries, and schools.



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4. Over the past years, noroviral institutional outbreaks due to person-to-person transmission has become the predominant mode of transmission. Person-to-person transmission has caused a greater number of outbreaks and affected more people than has foodborne outbreaks. In view of the complexity of the epidemiology of noroviruses, surveillance systems play an important role in providing information on the disease pattern at community level.

5. Currently, most international strategies focus on controlling infections through source control, early detection, and joint laboratory surveillance network. Much effort has also been directed towards the prevention of person-to-person spread in healthcare and institutional settings. For instance, the US CDC emphasized consideration of new diagnostics in outbreak investigation, surveillance of potential contamination sources such as harvest waters, heightened awareness about food contamination by infectious foodhandlers, and prevention of person-to-person spread during institutional outbreaks.

6. Taking reference from these experiences and the local situation, we have set out the following guiding principles:

- (a) Food borne spread of norovirus infection should be prevented through a farm to fork approach targeting at upstream control;
- (b) Person-to-person spread of norovirus infection should be targeted through preventing contamination of food sources, interruption of transmission, enhanced personal and environmental hygiene especially with regard to the handling of vomitus;
- (c) Vigilance should be maintained through a multi-faceted surveillance incorporating food, laboratory, and clinical elements;
- (d) Better understanding of the disease and their risk factors through applied research is necessary for developing long term strategies for prevention.

Key Strategic Areas

7. By capitalizing on the existing infrastructure and capacities, we propose a set of strategies covering the following areas:

- Disease surveillance and laboratory support
- Food safety and control
- Outbreak control at health care and institutional settings
- Public health education
- Applied research

Disease surveillance and laboratory support

8. Among roles of surveillance, two key areas should be considered:
- Identification and early warning of outbreaks
 - Estimation of disease burden

Currently the Department of Health operates sentinel surveillance systems at the community level based at Private Practitioners, General Outpatient Clinics, Child Care Centres and Elderly Homes. Surveillance systems with syndromic approach provide data on gastroenteritis activity in the community and give some perspectives of disease burden. Syndromic surveillance systems may provide early warning of disease outbreaks e.g. symptoms such as diarrhoea, vomiting and fever could be monitored in various healthcare settings. The Department of Health's current gastroenteritis surveillance systems should be regularly reviewed, and enhanced if necessary, to ensure that they provide reliable estimates of disease burden and offer early alerts for increased gastroenteritis activity in general and norovirus in particular. To provide more comprehensive estimates of disease burden of gastroenteritis, extension of surveillance to cover in-patient data from hospitals should also be considered, leveraging on routinely collected computerized discharge and laboratory data.

9. Due to the changing molecular epidemiology of norovirus infections, there is a need to explore rapid and sensitive diagnostics for timely detection of new emerging strains in outbreaks and for monitoring of disease trends in the community. Improved diagnostics are anticipated to further enhance existing surveillance systems.

Food safety and control

10. To reduce the risk of foodborne transmission of norovirus, close liaison should be maintained with the food trade to ensure food safety. Stringent food safety and hygiene measures should be instituted and reviewed periodically at food premises. There is also a need to teach food handlers on the proper food safety and hygiene measures, as they may become the source of infection for foodborne norovirus outbreaks. Special emphasis should be placed on effective isolation of infectious employees and environmental decontamination if an outbreak occurs at the food premises.

11. Existing food safety control measures should be reviewed, targeting actions at different stages of the supply chain. In particular, the food trade should be made aware of their responsibility in ensuring food safety using a farm-to-fork approach. Targeted risk communication at the point-of-sale or consumption should be considered especially for high risk food items such as raw oysters.

12. Food safety legislations on imported seafood especially shellfish should be reviewed. More stringent standards when requiring exporting countries to certify the suitability of raw oyster for human consumption should be explored, taking reference from international practices and guidelines. For instance, imports of shellfish can be required to demonstrate compliance with standards equivalent to those established by internationally recognized programmes such as the United State's National Shellfish Sanitation Programme and the Canadian Shellfish Sanitation Programme. International developments on the identification of potential indicators of sanitary quality of shellfish and their growing waters should be closely monitored. New microbiological parameters, if available, would be more useful than traditional bacterial indicators (faecal coliform and *E. coli*) as the latter may not always reveal the presence of viral contamination.

Outbreak control in healthcare and institution settings

13. For outbreaks in hospitals and other institutional settings, where the risk of person-to-person transmission is high, specific control measures should focus on containment of infectious individuals, improved hygiene, and environmental decontamination. Staff of healthcare facilities and institutions should be equipped with knowledge and skills about infection control measures with special emphasis on the proper procedures in environmental disinfection following vomiting incidents. In collaboration with the Hospital Authority, the Private Sector and other stakeholders, the Centre for Health Protection, should update norovirus outbreak and infection control guidelines and disseminate these to relevant institutions ensuring that messages are standardized and consistent. The guidelines should pay particular attention to environmental disinfection and isolation of infected staff. Staff should also be reminded to report any suspected outbreaks of gastrointestinal illness as soon as possible.

Public health education

14. To enhance awareness on norovirus infection and its public health significance, the relevant authorities and health professionals should continue to provide the public with knowledge of the illness and related health advice on personal and environmental hygiene through various channels, particularly during the high-risk winter seasons. Focused risk communication and health education activities prior to the peak season should be considered. Consumer education on safe food hygiene, handling and consumption should also be reinforced. More active health education with specific and practical health messages should be conducted.

Applied research

15. Molecular research into the links between pathogens in food and human infection, and the pattern of pathogens in specific foods using advanced

subtyping methods should also be encouraged.

16. Lifestyle factors, including consumption patterns of high-risk food items such as locally cultured shellfish and food preparation practices, may play an important role in norovirus infections. As such, studies that characterize these behavioural risk factors will help in the design of public health interventions to reduce the threat of norovirus outbreaks.

Recommendations

17. In summary, we propose the following strategies for the prevention and control of norovirus outbreaks in Hong Kong:

Surveillance

- Ensure vigilance against norovirus through regular review and on-going enhancement of existing community based gastroenteritis surveillance systems
- Extend the scope of surveillance to cover hospitals, leveraging on routinely collected and computerized clinical and laboratory data
- Enhance laboratory diagnostics for detection of norovirus for timely detection of outbreaks and monitoring of disease burden

Food safety and control

- Ensure effective risk communication and education of the food trade and the public
- Review existing food safety control measures at different stages of the supply chain, including the legislation on imported seafood, taking reference from international practices and developments
- Explore setting science-based standards that offers adequate public health protection when requiring exporting countries to certify the suitability of raw oyster for human consumption
- Explore strengthening of the control measures with the aid of new technologies for virology indicators in food surveillance

Outbreak control in healthcare and institution settings

- In collaboration with Hospital Authority, the Private Sector and other interested parties, update and disseminate standardized guidelines for the management of institutional outbreaks, particularly on environmental disinfection and isolation of infected staff.
- Conduct regular training for staff at healthcare and institutional settings

Public health education

- Promulgate disease knowledge and health advice on norovirus infection with emphasis on high risk foods such as oysters
- Enhance risk communication and health education activities prior to the usual peak norovirus season
- Consider dissemination of more specific and practical health message

Applied research

- Encourage research on (1) the disease burden of norovirus infection and (2) molecular studies on the linkages between pathogen patterns in food and infection in humans
- Conduct behavioural studies to identify potential high-risk eating behavior and food handling practices

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