Control of Gastroenteritis Outbreaks in Long-Term Care Homes

A Guide for Long-Term Care Homes and Health Unit Staff

Public Health Division
Ministry of Health and Long-Term Care
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This document reflects the committee's consensus position on prudent practice and is made available as a resource to public health and health- care providers.

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EXECUTIVE SUMMARY

Gastroenteritis outbreaks in institutions became a Reportable Disease under the *Health Protection and Promotion Act* in 1991. The increased person-to-person contact and presence of a population with weakened immune systems increases the risk of gastroenteritis outbreaks in Long-Term Care Homes (LTCHs). Gastroenteritis outbreaks continue to occur and to control them; LTCHs require the development of effective infection control programs.

Control of Gastroenteritis Outbreaks in Long-Term Care Homes replaces *A Guide to the Control of Enteric Disease Outbreaks in Health Care Facilities: Outbreak Control* (MOHLTC 1993). The purpose of the guide is to assist LTCHs before, during, and after a gastroenteritis outbreak and to minimize illness, hospitalization, and death, related to gastroenteritis outbreaks in LTCHs.

This guide will provide useful and practical information that will help LTCHs:

1. Develop outbreak management policies and procedures and infection control programs
2. Understand the importance of surveillance, early identification, and isolation of cases to prevent disease spread
3. Educate their staff on policies and procedures and the importance of Routine Practices
4. Respond to and manage a gastroenteritis outbreak should one occur
5. Develop procedures for managing outbreaks associated with food

The recommendations presented are based on the most current, evidence-based literature, clinical knowledge, trends, and expert consensus on prevention, detection, management, and control of gastroenteritis outbreaks. Included are quick reference appendices that outline procedures for managing specific microorganisms (pathogens) and summaries of what to do if an outbreak is suspected and what to do during an outbreak.

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ABBREVIATIONS

CDI	***Clostridium difficile* Infection**
CHICA	**Community Health and Infection Control Association**
ICP	**Infection Prevention and Control Professional**
IPC	**Infection Prevention and Control**
MOHLTC	**Ministry of Health and Long-Term Care**
HACCP	**Hazard Analysis Critical Control Point**
HAI	**Health Care-Associated Infections**
HPPA	**Health Protection and Promotion Act**
OHA	**Ontario Hospital Association**
OMA	**Ontario Medical Association**
OHSA	**Occupational Health and Safety Act**
OMT	**Outbreak Management Team**
PIDAC	**Provincial Infectious Diseases Advisory Committee**
PHF	**Potentially Hazardous Food**
PHAC	**Public Health Agency of Canada**
PPE	**Personal Protective Equipment**
RICN	**Regional Infection Control Network**
LHIN	**Local Health Integration Network**
LTCH	**Long-Term Care Home**

GLOSSARY

Additional Precautions - These precautions (i.e., Contact Precautions, Droplet Precautions, and Airborne Precautions) are carried out in addition to Routine Practices when infections caused by organisms transmitted by these routes are suspected or diagnosed. They include the physical separation of infected or colonized patients/residents from other individuals and the use of barriers (e.g. gowns, gloves, masks) to prevent or limit the transmission of the infectious agent, from colonized or infected individuals, to those who are susceptible to infection or to those who may spread the agent to others.

Alcohol-based hand rub (ABHR) - A liquid, gel, or foam formulation of alcohol (e.g., ethanol, isopropanol) which is used to reduce the number of microorganisms on hands in clinical situations when the hands are dry and not visibly soiled. ABHRs are less time-consuming to use than washing with soap and water.

Attack rate - The occurrence of disease observed among a defined population over a limited period of time.

Baseline - The normal level or presence of a disease or infectious agent within a given geographic area or a population group and time period**.**

Case - A person with the particular illness or disease, usually fitting the case definition.

Case definition - A set of criteria for determining who should be classified as a case. The definition is comprised of clinical information and should include epidemiological information related to time, place, and person.

Cohorting - *Cohorting of patients/residents*: Grouping of patients/residents who present either with the same set of symptoms or are asymptomatic. *Cohorting of staff*: Grouping of staff to care for a specific group of residents or to assign them to a floor/unit that either contains or does not contain active cases.

Common-source outbreak - A type of outbreak that occurs when individuals are exposed to a point-source of infection at the same time.

Contact precautions - A type of Additional Precautions to reduce the risk of transmitting infectious agents via contact with an infectious person. Contact Precautions are used in addition to Routine Practices.

Contact time - The length of time a surface is exposed to a disinfectant in order for the disinfectant to be effective against micro-organisms.

Contract worker - Workers from an outside agency. These workers include health-care workers, maintenance and other workers or those who carry on activities in resident-care areas or come into contact with residents, such as hairdressers.

Control measure - Any action or activity that can be used to prevent, eliminate or reduce a significant hazard.

Cross-contamination - The transfer of pathogens from one food item to another during food preparation through cooking equipment, utensils, or the hands of food handlers.

Endemic - The usual presence of a disease or infectious agent within a given geographic area or a population group. Usually expressed as a rate of prevalence.

Fecal - oral transmission – Transmission of micro-organisms such as bacteria, viruses, and parasites from feces into the mouth, through contaminated hands, food, water, or objects.

Food handler - A person who directly handles or prepares food.

Fomite - An inanimate object or substance capable of carrying infectious organisms (such as germs or parasites). A fomite can be anything such as a cloth or mop head.

Gastroenteritis - Inflammation of the stomach and intestines that usually causes diarrhea and/or vomiting.

Hazard Analysis Critical Control Point (HACCP) – A science-based, systematic approach of identifying, evaluating, and controlling food-safety hazards. HACCP is designed to prevent, reduce, or eliminate potential biological, chemical, and physical food-safety hazards, including those caused by cross-contamination.

Health-care setting - Any location where health care is provided, including settings where emergency care is provided, hospitals, LTCHs, outpatient clinics, community health centres and clinics, physician offices, dental offices, and home health care.

Incubation period - The interval from the time an individual is infected to the time when symptoms first appear.

Infection prevention and control committee - A group that meets regularly to discuss infection-control issues. LTCHs are required to have infection-control committees.

Infection prevention and control professional (ICP) – A health professional designated to be responsible for infection-control programs in the facility, in accordance with the Long-Term Care Facility Program Manual. The infection-prevention and control professional should possess expertise and additional training in infection prevention and control. In a LTCH, there is a designated staff member to coordinate the program who has education and experience in infection prevention and control practices (including infectious diseases, cleaning and disinfection, data collection and trend analysis, reporting protocols and outbreak management" [O. Reg. 79/10, s. 229 (3)]

Infectious period - The time during which infected individuals are able to transmit their infection to others.

Just Clean Your Hands - A MOHLTC program created to help hospitals and individuals overcome the barriers to proper hand hygiene and improve compliance with hand hygiene best practices. http://www.health.gov.on.ca/en/ms/handhygiene/

Line listing - A table that summarizes information about persons associated with an outbreak. It often includes identifying information, demographics, clinical information, and exposure or risk-factor information.

Long-Term Care Home - A nursing home under the Long-Term Care Homes Act, 2007, S.O. 2007, Chapter 8, a home under the Homes for the Aged and Rest Homes Act, or an approved charitable home for the aged under the Charitable Institutions Act.

Non-staff - Visitors, family members, and community groups.

Onset - The date and time when clinical signs or symptoms first appear.

Outbreak - An unexpected increase of disease occurring within a specific population at a given time and place.

Paid Sitter - A person who is not employed by the LTCH but may provide patient care. This person is normally hired by the family of the resident.

Person-to-person outbreak - An outbreak that occurs when infection is spread from one person to another.

Point-source outbreak - An outbreak that occurs when infections stem from a single source, for example an outbreak spread to people who have eaten a contaminated food item.

Potentially hazardous foods - are those that are capable of sustaining growth of pathogens (harmful bacteria). *They generally have high protein content, are neutral in acidity and are moist.* Common examples are poultry, meat, fish, and dairy products. Potentially hazardous foods must be handled carefully with respect to temperature; they must be stored at or below 4°C and must be cooked to a specified internal temperature before being served to ensure they are safe. Although some fruits and vegetables have been implicated in large-scale, food-borne outbreaks, they lack the ingredients necessary for uncontrolled bacterial growth. It is not necessary to store them in a refrigerator or cook them to a specific temperature to ensure safety. These foods need still need to be handled with extra care and washed thoroughly before use.

Residents - Those living permanently or temporarily in Long-Term-Care and Retirement Homes.

Retirement Homes - means a residential complex or the part of a residential complex,

a) that is occupied primarily by persons who are 65 years of age or older,
b) that is occupied or intended to be occupied by at least the prescribed number of persons who are not related to the operator of the home, and
c) where the operator of the home makes at least two care services available, directly or indirectly, to the residents (taken from Retirement Home Act 2010)

Routine Practices - The system of infection prevention and control practices recommended by the Public Health Agency of Canada to be used with all patients/residents during care to prevent and control the transmission of micro-organisms in all health-care settings. The full description of Routine Practices to prevent and control transmission of nosocomial pathogens can be found on the Updated Best Practices Manual for Routine Practices and Additional Precautions in Ontario is available from the Public Health Ontario website at: http://www.oahpp.ca/resources/pidac-knowledge/

Staff - All persons who carry on activities in the LTCH, including but not limited to employees, volunteers, students, attending physicians, and both health-care and non-health-care contract workers.

Surveillance of disease - Surveillance is the systematic and ongoing collection, collation, and analysis of data and the timely dissemination of information to those who need to know so that action can be taken to reduce the number of illnesses.

Visitors - People not affiliated with the institution who visits residents. They may include relatives or friends of a single resident, or groups who visit many residents.

1.0 INTRODUCTION

Gastroenteritis outbreaks continue to represent a significant burden of illness in Ontario's Long-Term Care Homes (LTCHs). Each year, approximately 1000 - 1200 gastroenteritis outbreaks are reported to public health. The number of cases associated with a single outbreak may range from 10 to 200. Likewise, significant mortality may also be associated with these outbreaks.

Gastroenteritis outbreaks can be caused by bacteria, viruses, or parasites contracted through the consumption of contaminated foods or beverages, and through contact with contaminated items or infected persons. Many outbreaks can be prevented or have their impact mitigated through intentional, knowledgeable, and rapid identification and management of the case to minimize the spread of disease to prevent illness, hospitalization and death.

1.1 Purpose

This guide will provide:

1. The minimum standards to reduce and manage gastroenteritis outbreaks in LTCHs (Box 1)
2. A list of further resources and practical tools
3. The most updated review of evidence-based literature, clinical knowledge, trends, and expert consensus on the control and management of gastroenteritis outbreaks

Box 1. Outbreak Guide: Purpose and Scope

This guide will provide useful and practical information that will help facilities:

- Develop outbreak management policies and procedures
- Prevent outbreaks
- Identify and isolate cases to prevent disease spread
- Respond to and manage a gastroenteritis outbreak should one occur

Scope:

- May be useful in other settings – such as retirement homes, child-care, acute-care, and correctional facilities, shelters, residential camps, and group homes – although not all the information in this guide will be applicable to all settings
- Replace A guide to the control of enteric disease outbreaks in health care facilities: outbreak control (MOHLTC, 1993)
- Should be used in conjunction with other provincial and national best-practice guidelines or other guidance documents related to gastroenteritis and infection prevention and control. See References and Further Information Section

1.2 The Role of Public Health

Local boards of health provide invaluable assistance and expertise in the prevention, detection, management, and control of gastroenteritis outbreaks. Health-care facilities and institutions are required to report gastroenteritis outbreaks to their local Medical Officer of Health. The Ontario Public Health Standards state

that each Public Health Unit must provide nursing homes, health care facilities and child-care centres with expertise in infection prevention and control and outbreak management.

The roles and responsibilities of the Public Health Unit with respect to gastroenteritis outbreaks are outlined in Box 2.

BOX 2. Public Health Units: Roles and Responsibilities

- Ensuring qualified public health personnel are available 24 hours a day, 7 days a week
- Supporting/consulting with Infection Prevention and Control Professionals and providing representation on the OMT
- Support for Infection prevention and control programs and committees
- Consulting on surveillance, infection prevention and control policies and procedures, and outbreak management
- Consulting on the investigation and management of reportable communicable diseases
- Collecting data, analyzing outbreaks, and reporting to the MOHLTC on institutional gastroenteritis outbreaks for use in further analysis and the identification of provincial trends
- Performing regular food and environmental inspections
- Food and equipment testing may be required during the investigation of food-borne outbreaks
- Ensuring LTCH staff has ready access to the contact names/numbers for the Public Health Unit http://www.health.gov.on.ca/english/public/contact/phu/phuloc_dt.html#36

1.3 The Role and Responsibilities of the Long-Term Care Homes

LTCHs are responsible for ensuring effective outbreak management, timely detection of cases and communication of these cases to public health. The requirement for communication to public health is stipulated under Section 27(2) of the HPPA. LTCHs are also responsible for provisions made in the *Long-term care homes program manual* (MOHLTC 2007b). Infection control measures recommended for all heath care settings and LTCHS are outlined in *Best practices for infection prevention and control programs in Ontario* (Appendix B in PIDAC 2011a).

1.4 Types of Gastroenteritis Outbreaks

Gastroenteritis outbreaks result from direct contact with contaminated food, water, or people. Food-or water-borne transmission results from eating food or beverages contaminated at the source or during their preparation, handling, or storage. Transmission may also occur through indirect contact with contaminated fomites. The agents responsible for these outbreaks may be viral, bacterial or parasitic in nature.

1.4.1 Outbreaks Caused by Viruses

Viral gastroenteritis is the leading cause of gastroenteritis outbreaks in institutions. Norovirus and rotavirus are the most common cause of such outbreaks. For noroviruses, the modes of transmission include aerosolization, indirect transmission via contaminated surfaces, person-to-person spread, or consumption of contaminated food and beverages. It is of importance to note that contamination of food most often occurs through an infected food handler. Noroviruses affect both residents and staff, especially during the winter

months when community incidence of norovirus is also high. Indicators of a norovirus outbreak include sudden onset of symptoms, a significant proportion of affected persons experiencing nausea and vomiting (higher in staff than residents) as well as diarrhea. Norovirus outbreaks in health care settings can place increased stress on resources, including increased costs due to higher demands for health care workers such as nurses and for diagnostic services (Zingg et al. 2005). During a viral outbreak, more than 50% of the residents and staff in a health care facility may become ill. Factors involved in how a viral outbreak begins are outlined in Box 3.

Although there may be a common source such as a food item that is responsible for an outbreak, secondary transmission of viruses from one person-to another can readily occur. Infected individuals typically shed millions of viral particles in their feces or vomitus. However, only a few of these particles are needed to cause infection. Norovirus particles can contaminate large portions of the environment in a LTCH and are able to survive for days on a variety of surfaces, making hand hygiene vital to infection control efforts.

BOX 3. Examples of How a Viral Outbreak Starts?

- An infected staff person, resident, or visitor contaminating commonly-touched surfaces and equipment
- An infected staff person, resident or visitor with unclean hands or gloves touching other workers, shared equipment or residents
- Inadequate cleanup of body fluids (i.e., diarrhea and vomit) and the subsequent contamination of the environment
- Vomiting and/or uncontrolled diarrhea spreading virus, through droplets sprayed into the air (aerosolization)
- The sharing of resident equipment, such as a commode, that is not properly cleaned and disinfected between uses by different residents
- Staff or visitors who enter the LTCH when they have the symptoms of gastroenteritis
- A resident – infected while outside the LTCH – bringing the virus back into the LTCH
- An infected food handler contaminating residents' food

1.4.2 Outbreaks Caused by Bacteria and Parasites

Although less frequent, bacteria and parasites are important causes of gastroenteritis outbreaks. Such outbreaks often arise from a point source such as bacteria-contaminated food or water. The initial attack rate can be high, but the disease usually does not spread beyond those initially infected. Unlike viral transmission, person-to-person transmission of bacteria and parasites is less common. As a result, there is greater success in controlling outbreaks caused by bacteria and parasites. However, these organisms often cause more severe illness and are more likely than viral infections to cause deaths in the elderly or immuno-compromised.

Clostridium difficile infection (CDI) is another common cause of diarrhea in Ontario's long-term care institutions (MOHLTC 2009a). The elderly are at higher risk of CDIs because of age-related changes in their natural intestinal flora and because of their weakened immune systems. Without the presence of normal bowel bacteria, *C. difficile* bacteria can start to grow and produce a toxin that can cause illness. CDIs typically occur in residents with a history of recent infections and antibiotic usage. CDI usually begins with mild diarrhea progressing over several days to more severe disease which rarely includes vomiting. Symptoms will persist or worsen if appropriate treatment is not administered. *C. difficile* is shed in faeces. It

can be picked up by hands touching objects contaminated with *C. difficile* in the environment, and can get into the stomach after touching one's mouth, or if contaminated food is consumed. The transmission of C. difficile occurs due to inadequate hand hygiene and environmental cleaning. Education of health care workers along with diligent infection prevention and control practices (i.e. meticulous hand hygiene and appropriate environmental cleaning) are important factors in preventing CDI outbreaks from occurring.

For more information, please see the PIDAC *Annex C: Testing, Surveillance and Management of Clostridium difficile in All Health Care Settings*:

http://www.health.gov.on.ca/english/providers/program/infectious/diseases/best_prac/bp_cdiff.pdf

Please also see the *Control of Clostridium difficile Infection (CDI) Outbreaks in Hospitals - A Guide for Hospital and Health Unit Staff, Public Health*, December 2009 for more information. The Guide can be accessed at:

http://www.health.gov.on.ca/patient_safety/pro/cdad/pro_resource/guide_cdi_infect_control.pdf

2.0 PREPARATION – INFECTION CONTROL AND OUTBREAK POLICIES AND PROCEDURES

Not all gastroenteritis infections and outbreaks in LTCHs are preventable. However, 20% of these infections can be prevented through adherence to an Infection Prevention and Control (IPC) program (Harbath et al. 2003).

While infection prevention and control is everyone's responsibility, the senior administration of a health-care facility has primary responsibility for IPC programs in their institution. Senior administration must designate a competent, trained person to be in charge of the infection prevention and control program at all times. An alternate or designate should also be assigned during their absences such as vacations, evenings, nights, and weekends.

Effective IPC begins with preparation and implementation of outbreak control policies and procedures, the use of infection prevention techniques (Routine Practices), and implementation of Additional Precautions when deemed necessary.

When developing outbreak control policies and procedures, the recommended points are outlined in Box 4. The following documents are also recommended for this purpose:

- *Best practices for infection prevention and control programs in Ontario* (PIDAC 2011a)
- *Best practices for Environmental Cleaning for Prevention and Control of Infections* (PIDAC 2009)
- *Infection control guidelines: Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care* (PHAC 1999)
- *Routine Practices and Additional Precautions in all Health Care Settings* (PIDAC 2011b)

Box 4. Policy Preparation

Develop policies for:

- **Disease Prevention**: include Routine Practices and Additional Precautions; hand hygiene; reducing the risk of transmission of infectious agents; education of staff, volunteers, residents and families; environmental cleaning
- **Outbreak Preparedness**: have policies in place and review annually
- **Surveillance**: include early identification of cases and application of appropriate practices to prevent disease transmission, management of data, and the declaration of an outbreak
- **Management of an Outbreak**: include composition, mandate, and roles of the Outbreak Management Team (OMT); a policy on staff exclusion; an outbreak staffing/resident plan for cohorting, transferring, and workload management to ensure an adequate staff-to-resident ratio
- **Staff, Resident, and Visitor Policies**: educate on what will happen during an outbreak

2.1 Outbreak Preparedness

All policies and procedures should be reviewed and updated annually or as needed by the LTCH with input from Public Health. Every LTCH should develop policies and procedures to include:

- The composition and mandate of the OMT
- A policy on excluding staff – and the criteria for their returning to work – during a gastroenteritis outbreak
- An outbreak staffing/resident plan for cohorting, transferring, and workload management
- Specimen collection, including where to obtain specimen kits; testing facilities available and after hours testing contact information (Appendix 1). Policies should also address receiving and reporting of laboratory test results
- The carrying out of control measures for residents, staff (including external service providers and contract staff), and visitors – including education about and reinforcement of Routine Practices and Additional Precautions and other control measures as applicable (Appendices 2-7)
- Routine, thorough cleaning and education on specific disinfection procedures, depending on the identified type of organism (PIDAC 2010)
- Food safety, records such as temperature logs for food and dishwashers are recommended. Menu choices; catered and external food for residents, and routine retention of food samples should also be recorded
- The roles and responsibilities of the home during an outbreak which include contact with local public health, the laboratory or laboratory-testing services available, communication with residents, and their families, staff, external groups and media during an outbreak
- Procedures for declaring the outbreak over

Infection Prevention and Control and Workers' Safety

When preparing for gastroenteritis outbreaks, it is often viewed as a resident safety issue; however, the health of workers in LTCHs must be considered. LTCHs must comply with applicable provisions of the *Occupational Health and Safety Act* (*OHSA*) and its Regulations when implementing infection prevention and control procedures since infection of staff is an occupational health and safety issue (Box 5). Employers,

supervisors, and workers have rights, duties, and obligations under the Act. A proactive approach to preparing policies and procedures is required to reduce the impact of outbreaks in LTCHs (PIDAC 2008).

Staff safety is addressed in *OHSA* and its Regulations, including the use of personal protective equipment (PPE), regulations pertaining to the proximity of food and drink to infectious materials, needle safety, and ceiling exposure values for biological and chemical agents.

2.2. The Infection Prevention and Control Program – Disease Prevention

As noted previously, effective IPC programs can reduce infections in health care settings. Central to an effective IPC program is the implementation of Routine Practices and Additional Precautions. These measures should be at the core of a disease prevention culture in all LTCHs.

BOX 5. Health and Safety of Health Care Workers

The *Regulation for Health Care and Residential Facilities* under the *Occupational Health and Safety Act* (OHSA) requires the LTCH develop written measures and procedures for the health and safety of workers, in consultation with the LTCH's Joint Health and Safety Committee.

These measures and procedures may deal with:

- Proper hygiene practices and the use of hygiene facilities
- Control of infections
- Use of appropriate antiseptics, disinfectants and decontaminants
- Use, application, care, removal and limitations of PPE
- Development by employer of health and safety training and educational programs for workers that are relevant to the workers' jobs

2.2.1 Routine Practices

Routine Practices are based on the premise that all residents are potentially infectious even when asymptomatic, and that standards of practice should be used **routinely** with **all** residents to prevent exposure to blood, body fluids, secretions, excretions, mucous membranes, non-intact skin or soiled items and to prevent the spread of microorganisms (Box 6; Appendices 2-7). Healthcare providers must assess the risk of exposure to blood, body fluids and non-intact skin and identify the strategies that will decrease exposure risk and prevent transmission of microorganisms before interacting with the client.

Routine Practices for specific gastrointestinal microorganisms and conditions are outlined in Appendix 2. LTCHs must comply with applicable provisions of the *OHSA* and its Regulations when implementing infection prevention and control procedures. Each health-care provider must conduct a risk assessment before interacting with the resident. To assess the risk of exposure the health-care worker should consider:

- Risk of exposure to body fluids or blood during the procedure. Thorough hand hygiene is sufficient for minimal risk procedures, whereas higher risk procedures require both thorough hand hygiene and use of additional infection control practices
- The procedure and the skill level of the health-care worker performing the procedure. Usually, the better trained a health-care worker is the less likely they will be exposed to body fluids or blood

- The resident's level of cooperation and cognitive awareness; for example, the more cooperative/cognitively aware, the lower the risk of transmission
- Using infection prevention strategies during every resident and health-care-provider interaction

BOX 6. What are Routine Practices?

Routine Practices are Health Canada/Public Health Agency of Canada's term to describe the system of infection prevention and control practices recommended to prevent and control transmission of microorganisms in health care settings. Routine Practices fact sheet is available at: http://www.oahpp.ca/resources/documents/pidac/Appendix%20E.pdf .

- These practices describe prevention and control strategies to be used with all patients during all patient care, and include:Hand hygiene with an alcohol-based hand rub or with soap and water before and after any direct contact with a resident. http://www.health.gov.on.ca/en/ms/handhygiene/moments.aspx
- The use of additional barrier precautions to prevent staff contact with a patient's blood, body fluids, secretions, excretions, non intact skin or mucous membranes
- Gloves are to be worn when there is a risk of hand contact with a patient's blood, body fluids, secretions, excretions, non intact skin or mucous membranes; gloves should be used as an additional measure, not as a substitute for hand hygiene
- Gowns are to be worn if contamination of uniform or clothing is anticipated
- The wearing of masks and eye protection or face shields where appropriate to protect the mucous membranes of the eyes, nose and mouth during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions or excretions

Hand Hygiene

Proper hand hygiene is the single-most important practice in preventing the transmission of infections. Hand hygiene refers to any action of cleaning one's hands; this may involve using alcohol based hand rub or liquid soap and water. Hand hygiene also encompasses the use of skin conditioners to maintain skin integrity, keeping nails short and clean, and refraining from wearing jewellery or nail enhancements.

To remove and/or kill micro-organisms on hands:

- Wash with soap and running water
- When hands are not visibly soiled use an alcohol-based hand rub (ABHR; containing at least 70% alcohol)

Institutions should emphasize the importance of proper hand hygiene through ongoing education, regular communications with – staff, residents, and visitors (Appendix 5). Auditing hand hygiene practices has been shown to improve compliance. Audit performance of hand-hygiene to identify current practices and to subsequently develop and implement strategies for improving thoroughness, appropriate timing and increased frequency. Audits should include direct observation.

BOX 7. Hand Hygiene Program

Essential Components of the Hand Hygiene Program:

- Develop a policy and procedure for hand hygiene and hand care programs
- Ensure easy access to hand hygiene agents and to hand washing sinks dedicated to hand hygiene and used for no other purpose
- 70 to 90% alcohol-based hand rubs must be provided in the LTCH
- Education that includes indications for hand hygiene, techniques, indications for hand hygiene agents and hand care
- Program to monitor hand hygiene compliance with feedback to individual employees, managers, chiefs of service and the Medical Advisory Committee via the Infection Prevention and Control Committee
- Just Clean Your Hands for Long-Term Care Homes
- Hand hygiene is the key to the health of the residents
- http://www.health.gov.on.ca/en/ms/handhygiene/ltch/default.aspx

Personal Protective Equipment (PPE)

PPE, such as gloves and gowns, and in some situations masks and eye or face protection, may be required as barriers against microorganisms. When used correctly, PPE helps protect staff and residents from infections, and the environment from contamination. Personal protective equipment only works when used properly; therefore, it is important for workers to don and remove PPE properly to avoid contaminating themselves, the environment, and others (Appendices 6, 7; Section 2.3.1 Contact Precautions).

Gloves protect the hands of health-care providers from contact with the resident's body fluids, blood, excretions, secretions, or non-intact skin. The **dos** and **don'ts** of using gloves are outlined in Box 8. ***Note:*** Not all gloves are suitable for all tasks. For example, co-polymer gloves are not suitable for providing direct care to residents, but may be used in food preparation. Match the type of glove to the procedure and the strain exerted on the glove during the procedure. The ICP, local health unit or Regional Infection Control Network can help in choosing appropriate gloves. Be aware of possible latex allergies, latex gloves are rarely necessary and should not be used if there is risk that staff or residents may have a latex allergy. A comparative guide to medical-grade gloves is presented in *Routine practices and additional precautions in all health care settings* (Appendix 6).

Gowns

Use gowns to protect uncovered skin and protect clothing or uniforms during activities likely to generate splashes or sprays of stool or vomit. The cuffs of the gloves must cover the cuffs of the gown. Remove gowns before leaving the resident's room or dedicated space or if they become soiled, wet, or contaminated.

Masks and Eye Protection

Wear masks and eye protection to protect eyes, nose, and mouth during procedures likely to generate splashes or sprays of stool or vomit. Consider using a mask to minimize the risk of touching nose and mouth with contaminated hands.

Box 8. Effective Use of Gloves for Disease Prevention

DO NOT

- Substitute gloves for hand hygiene
- Wear gloves for routine procedures limited to touching a resident's intact skin
- Wear gloves when feeding a resident
- Wash or reuse single-use, disposable gloves
- Double glove
- Wear the same gloves for activities involving more than one resident

DO

- Wear clean, non-sterile gloves when:
  - Contact with stool and vomit is anticipated
  - Handling visibly soiled items
  - Worker's hands have open cuts, wounds or skin conditions i.e. eczema, psoriasis, dermatitis
- Change gloves and perform hand hygiene before putting on gloves and between procedures with the same resident
- Remove and discard gloves:
  - Immediately after completion of the task
  - If they become ripped or damaged
  - At the point of use before leaving the room
  - Before touching clean environmental surfaces

Failure to do so negates the benefit of wearing gloves

2.3 Additional Precautions

Additional Precautions are necessary for certain pathogens and symptoms, and includes airborne, droplet and contact modes of transmission (PIDAC 2011b). Gastrointestinal infections typically cause significant vomiting and diarrhea, which contaminates the environment with gastrointestinal micro-organisms. Contact and/or droplet precautions are recommended as soon as symptoms of a gastroenteritis infection develop as the virus may become aerosolized.

2.3.1 Contact Precautions

Contact Precautions should always be used in addition to Routine Practices. Following the strategies below will help to decrease infection transmission (see Appendices 2, 4).

- Try to keep residents with vomiting and diarrhea at least two meters away from other residents and visitors
- Residents with gastrointestinal symptoms should be isolated in their rooms and provided with tray service
- Do not allow infected residents to participate in group activities for at least 48 hours after their symptoms have resolved

- Instruct visitors on the precautions they should follow
- Identify all equipment and supplies designated to be used by ill residents and store them securely, preventing their use by/for other residents. If a lack of equipment or storage space makes this unfeasible then do not use the equipment until it has been thoroughly cleaned and disinfected

Staff must use PPE in situations such as:

- Wearing gloves when a resident has soiled themselves or their environment
- Using a gown if there is a risk that the health-care worker's uniform or clothing may become soiled
- Wearing a mask and goggles or a face shield to protect from splashes if a resident has explosive diarrhea or projectile vomiting or when there are other situations that pose risk of splashing such as removing fecal material or vomitus using a sink spray nozzle. To prevent contamination, store clean supplies outside the rooms of infected residents
- Providing containers in residents' rooms for the disposal of soiled PPE
- Reinforcing the importance of hand hygiene with roommates and visitors – visitors who provide direct care to residents (i.e. toileting) should use the same PPE as staff and be instructed on how to properly do so

2.3.2 Other Disease Prevention Strategies

Other disease prevention strategies include, routine environmental cleaning and disinfection, safe food-handling practices, a staff health policy, and a visitor health policy which shall include but not be limited to the recommendations below (PIDAC 2011b, 2009).

Routine and Enhanced Environmental Cleaning and Disinfection.

Each LTCH should have written policies and procedures for:

- Routine cleaning and disinfecting
- Increased cleaning during an outbreak, and should review and update standards annually to ensure they reflect current best practices

Policies should include proper use of supplies for cleaning and disinfecting, laundry-handling practices, and proper handling and disposal of waste (Appendix 8, PHAC 1998, PIDAC 2009, PIDAC 2010).

Some basic cleaning principles include:

- Movement from clean areas to dirty areas
- Clean from top to bottom
- Increase cleaning of high-contact surfaces during gastroenteritis outbreaks
- Adherence to manufacturer's instructions on how to prepare and store cleaning solutions and the recommended contact time

Enhanced environmental cleaning practices should always be implemented during outbreaks (Box 9).

Box 9. Enhanced Environmental Cleaning Practices

Emphasize the following during an outbreak:

- Increase routine cleaning of all frequently touched surfaces such as door handles, bed railings, hand rails, light switches, elevator buttons, over-bed tables, dining tables, and counters
- Increase the cleaning and disinfecting of all surfaces in the symptomatic resident's immediate environment
- Disinfect multi-use equipment and discard disposable equipment before leaving the resident's room
- If possible, dedicate specific equipment to each symptomatic resident. If not possible, properly clean and disinfect equipment shared between residents
- Promptly clean and disinfect surfaces contaminated by stool and vomit (Appendix 8)
- Clean soiled carpets and soft furnishings with hot water and detergent, or steam clean – vacuum cleaning is not recommended

Safe Food Handling Practices: The local Public Health Inspector can provide recommendations and information on food safety requirements and best practices for:

- Food-service-worker hygiene
- Kitchen sanitation
- Safe food preparation and temperature control practices, and food-safety education

Staff Health Policy: Staff with any gastroenteritis symptoms should stay off work when ill and continue to remain home for a minimum of 48 hours after their GI symptoms (i.e. vomiting, diarrhea) have resolved. The LTCH can consult with Public Health once a specific agent has been identified where the exclusion period may need to be adjusted. .

Visitor Policies: Policies must be in place for visitors that are either infectious or who may become infected, protecting visitors, staff, and residents. Some policies that will help protect the residents, staff and the visitors themselves include:

- Posting signs at entrances outlining screening policies for non-staff (Appendix 9)
- Advising everyone not to enter the LTCH when they have gastrointestinal symptoms (e.g., diarrhea, nausea, or vomiting), respiratory symptoms (e.g., fever, cough, or runny nose), or other communicable diseases. This applies at all times, not only during outbreaks
- Providing hand-hygiene facilities and/or hand-hygiene products throughout the LTCH and especially at the facility entrances for use by all those entering and exiting

2.3.3 Education of Staff and Volunteers

An effective education program that is well planned and executed will improve IPC programs (Daly et al. 1992). The LTCH should educate all staff and volunteers about gastrointestinal infections at the time of hiring or orientation, annually thereafter, and when an outbreak occurs (Box 10). Put in place a mechanism to track the education each staff member has received. Education can include the use of brochures, signs, and

posters as well as courses and demonstrations. The type of education provided should be tailored to meet the needs of staff and the specific activities that they carry out with the LTCH.

Box 10. Education for all Staff and Volunteers

Education/orientation programs for all staff and volunteers (as applicable) should include information on:

- The transmission and prevention of gastrointestinal infections
- Routine Practices (Box 5, Appendices 2-7) and Additional Precautions (Section 2.3)
- Hand hygiene (Appendix 5)
- Donning and doffing PPE (Appendices 6, 7)
- Appropriate cleaning and disinfecting procedures to be followed after each use of multi-use equipment which is shared among residents (Appendix 8)
- Environmental cleaning and disinfecting procedures, especially for housekeeping staff
- Food safety – safe food-handling practices for receiving, preparing, storing, and transporting food
- Occupational Health policies
- Routine daily surveillance for signs of infection
- Roles and responsibilities of staff, administration, the ICP, and Public Health
- Specimen collection methods (Appendix 1)
- Gastroenteritis outbreak management
- Outbreak control

2.3.4 Education of Residents and their Visitors

Provide residents and visitors with appropriate education on:

- Hand hygiene
- Routine Practices and, in specific instances, Additional Precautions (specifically proper use of PPE)
- The transmission and prevention of gastrointestinal disease including the requirement not to visit the LTCH when they are ill
- Outbreak Management –what to expect (such as visitor restrictions) when there is a gastroenteritis outbreak

3.0 SURVEILLANCE AND OUTBREAK DETECTION

3.1 Surveillance

Effective surveillance is essential to ensure the early identification of outbreaks so that control measures can be instituted as soon as possible. LTCHs are required to have ongoing surveillance programs to detect infections. Surveillance is the systematic ongoing collection, collation, and analysis of data with timely communication and sharing of information to those who require it in order to take action (Box 11). The actions usually relate to improvements in prevention or control of the condition.

3.1.1 Target Groups for Surveillance

Patient/Resident Surveillance. Direct-care staff members are the key to good resident surveillance. Staffs who recognize and report initial signs of resident illness allow control measures to be implemented early, which is a vital step in preventing an outbreak.

To provide effective surveillance, staff must be given education and/or training in:

- Their role in surveillance and its importance
- Symptoms of gastrointestinal infection
- Criteria for a suspected outbreak
- Procedures for reporting to the ICP and when to report to local public health.

LTCHs must identify residents with gastrointestinal symptoms on a daily surveillance form or line list (Box 11, Appendix 10). Completed surveillance forms should be forwarded daily to the LTCH's ICP or designate. The IPC program should have surveillance strategies that actively seek out residents with infections. Typical surveillance strategies include:

- Conducting unit rounds
- Reviewing unit reports that include incidents of diarrhea and vomiting
- Reviewing physician/staff communication books
- Reviewing medical and/or nursing progress notes in charts
- Reviewing pharmacy utilization records
- Reviewing laboratory reports
- Receiving verbal reports from unit staff based on their clinical observations

Box 11. The Surveillance Form

What to include in your Surveillance Form:

- Resident name and location in LTCH
- Sex, age, or date of birth
- Signs and symptoms related to the gastrointestinal infection
- Onset date of symptom(s)
- Diagnostic tests and results when available
- Recent history of movement inside and outside the LTCH, such as hospitalization, diagnostic testing, clinical assessments, and outings
- Underlying conditions or medications, such as laxative and antibiotic use that may cause gastrointestinal symptoms
- Sample form, Appendix 10

Staff Surveillance

Since ill staff can bring infectious diseases into the LTCH staff should:

- Self-screen and stay home when they are vomiting and/or have diarrhea and
- Report vomiting and/or diarrhea to their supervisor or those persons in their LTCH accountable for employee health

The ICP should monitor staff illness to identify clusters or outbreaks. The supervisor of Occupational Health must promptly inform the ICP of cases and clusters of staff who are absent from work with the symptoms of gastroenteritis.

Analysis

The ICP should review surveillance data daily to determine whether any resident has symptoms of infectious gastroenteritis and if more than one person has such symptoms (i.e., an outbreak is suspected, Section 3.2). The public health unit can help to interpret and analyze surveillance data.

3.2 Outbreak Detection

The case definitions for a gastroenteritis outbreak use standard symptoms. These definitions apply in most situations but may need modification as circumstances dictate.

The case definition contains the criteria to be used during an outbreak to designate a resident or staff member as having infectious gastroenteritis. The case definition developed for residents may be different from that for staff. Individuals who meet the case definition are considered a case – even if laboratory test results are negative – unless another diagnosis or reason for symptoms (e.g., laxative use) is confirmed, or the case definition is changed to include the laboratory diagnosis.

Note: The Medical Officer of Health or designate may declare an outbreak in situations where **new, unusual or emergent diseases** may be suspected or identified.

3.2.1 Infectious Gastroenteritis Case Definition

To be defined as a case of infectious gastroenteritis **at least one** of the following must be met:

- Two or more episodes of diarrhea or watery stool (takes the form of its container) within a 24-hour period, or two or more episodes of vomiting within a 24-hour period, or
- One episode of diarrhea or watery stool (takes the form of its container) and one episode of vomiting within a 24-hour period, or
- Laboratory confirmation of a known gastrointestinal pathogen and at least one symptom compatible with gastrointestinal infection (e.g., nausea, vomiting, diarrhea, or abdominal pain or tenderness)

Note: Care must be taken to rule out non-infectious causes of these symptoms such as new medications, use of laxatives, or other non-infectious diseases. The bowel movements should be unusual or different for the resident. Some residents may not be able to report nausea or abdominal pain, in which case careful observation may be needed to determine if these symptoms are occurring. For example, behavioural changes may be a clue that residents are experiencing nausea or pain. Frail residents with small appetites may have only one episode of either vomiting or diarrhea and may or may not exhibit other signs and symptoms associated with gastrointestinal illness. LTCHs may want to consider these residents as suspect cases and implement infection-control measures to prevent potential transmission.

3.2.2 Outbreak Definition

An occurrence of gastroenteritis beyond what is normally expected based on surveillance data. This definition makes it clear why it is important to conduct ongoing surveillance to establish a baseline of normal occurrences for a LTCH. Some additional, simpler outbreak definitions are provided below for guidance. Contact your local Public Health Unit immediately if you suspect an outbreak.

3.2.3 Suspected Gastroenteritis Outbreak Definition

Two suspected cases of infectious gastroenteritis in a specific area, such as a home, unit, or floor within 48 hours.

3.2.4 Gastroenteritis Outbreak Definition

Three or more cases of infectious gastroenteritis in a specific area within a four-day period, or three or more units/floors having a case of infectious gastroenteritis within 48 hours. ***Note:*** This definition may be modified as the investigation proceeds.

4.0 MANAGING GASTROENTERITIS OUTBREAKS

Even a relatively small gastroenteritis outbreak is disruptive, often frustrating, and exhausting for residents, visitors, and staff. Infection control efforts can be difficult even with consistent use of Routine Practices (Appendices 2-7) and other outbreak control procedures; however, early detection and management are the keys to minimizing the impact. As a quick reference document, the steps involved in managing a gastroenteritis outbreak are presented (Appendices 11 and 12). Your local health unit will also have outbreak management resources to help you prepare.

4.1 Control Measures for a Suspected Gastroenteritis Outbreak

In the event of a suspected outbreak, the LTCH should immediately institute control measures, including, but not limited to:

- Advising Public Health
- Isolating residents with suspected gastroenteritis in their rooms and providing them with tray food service
- Reviewing Routine Practices
- Assessing the need for Contact Precautions (Section 2.3.1)
- Enhancing surveillance to look for additional residents that meet the case definition

When an outbreak is suspected, reinforcing the importance of proper hand hygiene and other Routine Practices to staff, visitors, and residents is recommended.

4.2 Steps in Outbreak Management

Each LTCH is responsible for ensuring that these outbreak management steps are implemented. Many of these activities are done simultaneously. **Use Appendix 11 and12 as a quick reference** for list of steps to take during an outbreak.

4.2.1 Assess the Outbreak

A line-listing template is available from your Public Health Unit. The template provides documentation of the extent and nature of the suspected outbreak (Appendix 13). Begin a line listing by adding surveillance data from the daily sheets. Prepare separate line lists for residents and staff and, if useful, keep a separate line listing for each affected unit/floor. The line listing may be expanded to include other relevant data – beyond that recommended in this document – as the investigation proceeds. Identify those at highest risk of infection within the LTCH, including all residents, staff, and casual workers, or residents on specific units and staff at risk as identified by the OMT.

4.2.2 Implement General Infection Prevention and Control Measures

Implement control measures and notify all staff as soon as an outbreak is suspected (See Section 5.0). Implement enhanced environmental cleaning. Refer to Box 9, section 2.3.2. For further information, contact your public health unit for further assistance.

4.2.3 Consult with the Public Health Unit

Upon notifying the Public Health Unit, provide an updated line listing, the name of the primary contact person responsible for the outbreak investigation (usually the ICP), and the names of staff responsible for managing the outbreak on evenings, weekends, holidays, and during vacation periods. Follow the remaining steps:

- Review the preliminary case definition for the suspected outbreak. Confirm with the Public Health Unit that infection prevention and control measures have been implemented
- Request an Outbreak Number for the investigation
- Discuss specimen collection and testing procedures with your Public Health Unit to determine:
    - The number of specimens that will be collected, stored and submitted to the laboratory
    - The number of laboratory specimens that should be taken during the initial outbreak investigation
    - Which residents to test during the initial outbreak investigation
    - How the specimens should be handled (e.g., stored, transported to the lab)

4.2.4 Declare an Outbreak

Outbreaks are declared by the Medical Officer of Health (or their designate) or the Medical Director of the LTCH based on either:

- The definition in this guide or
- Other specific factors of the particular outbreak

Case definitions must be reviewed periodically during the course of the outbreak and modified if necessary, for example, when you identify residents with new symptoms.

4.2.5 Notify Appropriate Individuals/Agencies

In addition to the Public Health Unit, notify some or all of the following as appropriate, both internally and externally.

INTERNALLY:

- Medical Consultant or Medical Director
- Director of Care or Director of Nursing
- Administrator
- The Operator or Board of Directors
- Chair of the Infection Prevention and Control Committee, Infection Prevention and Control Professional
- The Laboratory Services Provider
- Employee Health Nurse
- Families of ill or of all residents
- Director of Food Services
- Director of Housekeeping/Maintenance
- Resident representatives
- Pharmacist/Advising Pharmacy
- Staff members including maintenance and environmental personnel as well as activity/program personnel
- Community volunteers
- Attending physician(s), Nurse Practitioners, Resident physicians
- Other health-care providers, such as physiotherapists, and/or other service providers, such as activity co-ordinator, hairdresser

The Public Health Unit should consult with LTCH to determine who will notify the following EXTERNAL agencies:

- Acute-care hospitals – Infection Prevention and Control Professional
- Admitting and Emergency departments
- Compliance Advisor from the Ministry of Health and Long-Term Care
- Community Care Access Center /other institutions
- Staffing agencies
- Emergency Medical Services – ambulance

- Coroner's office if there is a death immediately preceding/during the outbreak
- Ontario Ministry of Labour, Regional Office (for cases of health-care acquired gastroenteritis in staff members)
- Local Health Integration Network (LHIN)
- The Provincial Transfer Authorization Centre (PTAC)
- Support services
- And/or the local Regional Infection Control Network

4.2.6 Hold an Outbreak Management Team Meeting

Management of the LTCH should hold a meeting of LTCH representatives with decision-making authority and a Public Health Unit representative as soon as possible. This group will become the Outbreak Management Team (OMT) and manage all aspects of the outbreak (Box 12).

Outbreak Management Team Duties:

Surveillance

- Review line-listing information to ensure OMT members understand the current status of the outbreak, its progression and the population at risk (i.e., number of residents, staff, visitors,)
- Review case and outbreak definitions to ensure all members of the OMT have a common understanding of the surveillance criteria

Investigation

- Confirm arrangements for the collection/submission of specimens for laboratory analysis (Appendix 1)
- Work with your Public Health Unit, Regional Infection Control Networks, and other experts as needed

Implementation of Control Measures

- Review the control measures and recommend any necessary modifications
- Control measures may differ for different organisms and may require ongoing modification, may include:
    1. Enhanced hand hygiene
    2. Strict adherence to Routine Practices and Additional Precautions
    3. Enhanced cleaning
    4. Enhanced visitor monitoring
    5. Restricting activities
    6. Modified food service operations if food is relevant to the outbreak
- Confirm that the LTCH's ICP, or designate, is responsible for ensuring agreed-upon control measures are in place and enforced

Communications

- Review who (persons/institutions) have been notified of the outbreak
- Prepare/distribute internal communications for residents, families and staff
- Review process for ongoing communication/education for staff including the individual responsible

- Review the process for communicating laboratory results and control measures with Public Health Unit staff and the ICP
- Confirm the process for daily communication between the LTCH and the Public Health Unit
- Ensure that the Public Health Unit and the LTCH's contact telephone numbers are accurate/available
- Verify contact information for after-hours, weekends, holidays
- Confirm appropriate outbreak notification signage is available and posted

Box 12. The Outbreak Management Team (OMT)

Roles and Responsibilities:

Chairperson

- Coordinates outbreak control meetings and the agenda
- Delegates tasks

Outbreak Coordinator (often the ICP)

- Ensures all OMT decisions are carried out
- Coordinates all activities required to investigate/manage the outbreak

Secretary

- Sets meeting times, location, and notifies committee members of any changes
- Records and distributes minutes of meetings.

Media Spokesperson

- Only the representative(s) identified by the OMT as the spokesperson(s) should give information to the news media. The media spokesperson can be a representative from the LTCH, the Public Health Unit, or a representative from each organization.

Communications' Role with the Media

- Confirm that the Public Health Unit may release information (including the name of the LTCH) to the media or others as necessary for transparency and to reduce the risk of disease in the community or other facilities within the Public Health Unit's jurisdiction
- Develop in advance a crisis communications plan in advance
- Prepare an outbreak-specific communication plan
- Prepare a media release if appropriate and confirm media spokesperson(s)

Process

- Decide how frequently the OMT will meet and set date and time for the next meeting
- Develop an evaluation framework

4.2.7 Monitor the Outbreak on an Ongoing Basis

Outbreak monitoring must include:

- Ongoing surveillance to identify new cases
- Monitoring the status of ill residents and staff
- Updating line listings (Box 13)
- Ongoing monitoring of precautions and control measures
- Reporting any significant changes in the nature of the outbreak (e.g. hospitalizations, deaths, changes in clinical picture)

The ICP must update the line listing and inform the Public Health Unit contact daily or as previously arranged. The review of the updated information should examine if there has been ongoing transmission, examine the effectiveness of control measures, and the presentation of the new cases. Furthermore, the review may suggest changes in the outbreak definition, changes in outbreak control measures, and additional laboratory testing (keeping in mind the possibility that additional causative microorganisms could be present).

5.0 CONTROL MEASURES FOR SPECIFIC GROUPS

5.1 Control Measures for Residents

Control measures are based on the clinical symptoms and the causative microorganism. If the cause is viral, relapses (e.g., the reappearance of the same clinical symptoms initially experienced) are common, and infection prevention and control measures are to be implemented after relapses. Symptomatic residents who meet the case definition should be restricted to their rooms for at least 48 hours after symptoms resolve as long as it does not cause the resident undue stress and can be done without using restraints. If this is not possible, then measures such as supervising the hand hygiene of cases and increasing the frequency of environmental cleaning and disinfecting on the unit/floor can help prevent the spread of gastroenteritis to other residents (Appendix 8).

If it is not possible to isolate ill residents, cohorting may be a viable option. If the outbreak is confined to one unit/floor, ensure all residents from that area avoid contact with residents in other areas of the LTCH. Identify washrooms used by both residents and visitors and, if possible, restrict their use by residents by locking them until the outbreak is declared over. Asymptomatic residents may leave the LTCH to visit in the community, as long as they understand that they are not to visit other health-care institutions. Refer to Appendix 2 for additional information on specific microorganisms or pathogens and when isolation to a single room is warranted.

Box 13. Updated Line listing: Resident and Staff Surveillance

Resident Surveillance:

- New cases, with all appropriate information
- Names of residents who have recovered/recovery date
- The status of ill residents and any issues, such as worsening symptoms or complications
- Identification of the causative organism through lab results
- Transfers to/re-admission from acute-care hospitals
- Deaths

Staff Surveillance

- New staff cases, together with all appropriate information
- Names of staff who have recovered
- Expected return-to-work dates as determined in collaboration with the Public Health Unit

5.1.1 Admissions and Re-admissions

New Admissions

Admission of new residents to the outbreak affected unit/floor is not recommended. Admission to non-affected units/floors is allowed. Changes to this control measure may be made in consultation with the Public Health Unit.

Re-admission of Residents

The re-admission of residents should be made in consultation with the OMT, the Public Health Unit, the ICP, the family and the physician of the resident.

The following should be considered when admitting new/re-admitting non-case residents to the LTCH during the outbreak:

- The outbreak is under control
- The resident's attending physician has agreed to the admission/re-admission based on a review of the resident's current health status
- Adequate staff is available to care for the resident
- Appropriate accommodation is available for the resident
- The resident/substitute decision-maker has been made aware of the outbreak and has given informed consent for the return

5.1.2 Medical and Other Appointments

If possible, re-schedule all non-urgent medical and other appointments until after the outbreak is over.

5.1.3 Transfer to Hospital, Other Facility or Urgent Appointment

Notify the ICP at the receiving hospital/other facility regarding the details of the outbreak to ensure control measures are in place when the resident arrives and whether or not the transferring resident has been identified as a case or comes from an affected area.

It is **not** recommended to transfer residents from anywhere in the LTCH to another LTCH during an outbreak. The Outbreak Management Team or the Public Health Unit and the ICPs of both facilities may approve the transfer of residents on a case-by-case basis. The Provincial Transfer Authorization Centre, Ambulance, Community Care Access Centre, or others must be notified about the outbreak when transfer is being arranged.

5.2 Control Measures for Staff and Volunteers

5.2.1 Well Staff

Minimize movement of staff, students, or volunteers between affected/unaffected floors/units and consider cohorting – assigning some staff members to look after ill residents and others to look after well residents. Alternatively, consider assigning staff to a single unit/floor. Where possible, have recovering staff returning to work care for symptomatic residents. Staff, students, or volunteers, who also work at other health-care facilities, day-care centres, and food premises, should advise their employers that they have been working in a LTCH at which there is an outbreak. They should immediately stop working at all institutions/facilities if they develop symptoms of gastroenteritis illness. Depending on the policies of their employers, staff may be asked not to return to work until 48 hours after their last exposure at the outbreak institution. This period could be modified if the causative agent is known. Staff should change their uniforms between facilities and before leaving the affected facility.

5.2.2 Ill Staff

Staff and volunteers with gastrointestinal illness should not enter the LTCH, but should report the illness to their supervisor who will report the illness to the Occupational Health Nurse or the ICP, or follow the reporting procedure of the LTCH. Staff, students, or volunteers with gastroenteritis should be excluded for at least 48 hours after symptoms have resolved. Once a specific causative agent is known, disease-specific exclusions apply. Discard all ready-to-eat foods (i.e., food not to be cooked) prepared by dietary staff that became ill while on shift.

5.3 Control Measures for Visitors and During Communal Activities

5.3.1 Modified Visitor Access

Post signs at all entrances, indicating the LTCH is experiencing an outbreak (Box 14). Closing the LTCH to all visitors is not recommended since this may cause emotional hardship for both the residents and their relatives, especially if the relatives have travelled from a distance. The OMT should discuss further visit limitations.

Box 14. Notifying Visitors of Their Risk of Infection*

Visitors should be advised of:

- That there is a potential risk they could acquire illness while in the institution
- That they may pose a risk of introducing/reintroducing illness to the LTCH

***Contact family members and advise them of their relative's illness.**

***If possible, keep a telephone list of frequent visitors and inform them of the outbreak**

Well Visitors

Encourage well visitors to postpone visits wherever possible. Discourage children under 12 from visiting during an outbreak unless there are exceptional circumstances. Those who do visit during an outbreak must:

1. Wash their hands with water and soap or, if their hands are not visibly dirty, with an alcohol based hand rubs containing between 70% and 90 % alcohol when entering the LTCH and just before leaving the resident's room
2. Visit residents only in their rooms and avoid communal areas
3. Visit only one resident and leave the LTCH immediately after the visit, if both parents are in the home but in different locations, it is recommended that the healthy parent (non-outbreak case) be visited first.
4. Do not mingle with other residents
5. Wear personal protective equipment as needed, especially if providing direct care, such as toileting, to the resident

Ill Visitors

Advise visitors not to enter the LTCH when they have gastrointestinal symptoms (e.g., diarrhea, nausea, or vomiting), respiratory symptoms (e.g., fever, cough, or runny nose), or other communicable diseases. This applies at all times, not only during outbreaks.

Visiting Ill Residents in Long-Term Care Homes

Place signs on the doors of ill residents' rooms or in other visible locations advising all visitors to check at the nursing station before entering the room. Visitors should visit ill residents only in their rooms. Discourage visitors from providing direct care to residents. If they are required to provide direct care, ensure they use appropriate PPE and perform careful and frequent hand hygiene without using the resident's sink. Visitors should be instructed about how to put on and remove PPE (Appendices 6, 7).

5.3.3 Communal Meetings and Other Activities

You should:

- Reschedule communal meetings on the affected unit/floor. However, other meetings or activities may proceed in non-affected areas
- Discontinue group outings from the affected unit/floor
- The OMT should discuss restricting meetings or activities in the entire LTCH if the outbreak spreads to two or more units/floors

- Do not permit visits by outside groups, such as entertainers, volunteer organizations, and community groups
- Conduct onsite adult programs such as physiotherapy and foot care for residents in their rooms, if possible. Proper precautions should be taken for ill residents.

Ensure there is no interaction between the affected floor/unit and participants in onsite child-care or other day programs.

6.0 DECLARING THE OUTBREAK OVER AND TERMINATION OF OUTBREAK CONTROL MEASURES

The Public Health Unit, in conjunction with the OMT or the LTCH's Administrator/Director of Care, will declare the outbreak over when the criteria in Section 6.1 are met. The OMT may identify ongoing surveillance needs after the outbreak has been declared over. Ongoing surveillance needs include:

1. Monitoring resident status, updating the line listing(s), and communicating with the Public Health Unit representative
2. Noting any deaths that occurred after the outbreak was declared over, including whether the deceased was part of the outbreak
3. Noting any further transmission among staff. Notify all those initially informed of the outbreak that the outbreak has ended

6.1 Criteria for Declaring an Outbreak Over

The end of an outbreak is determined on a case-by-case basis. The specific period will be decided by the Public Health Unit in conjunction with the OMT and is based on the transmission risk. The specific period varies by microorganism, but often is set at:

- No new cases after one infectious period plus one incubation period
- Generally, an outbreak without an etiologic agent can be declared over if no new cases have occurred within a specific period. Generally, this is 48 hours after the symptoms of the last case have disappeared and all appropriate precautions have been taken
- No new cases after one infectious period plus one incubation period. For example the most common type of enteric illness in LTCH's is Norovirus. As per the Position Statement a Nororvirus outbreak can be declared over after five days (Appendix 15)

In some circumstances, the Public Health Unit in conjunction with the OMT may decide that it is possible to resume some activities and discontinue some control measures during this period if:

- The last case was an isolated case on a unit. It may be possible to declare the outbreak over, with the assurance that strict infection prevention and control measures will remain in place until all symptoms of the case have disappeared
- The last case occurred in a staff person now excluded from the LTCH. It may be possible to declare the outbreak over once one incubation period has passed since the staff member was last present in the LTCH

Since large LTCHs have some sporadic gastrointestinal infection cases in non-outbreak situations, the OMT may need to attempt to differentiate between these sporadic cases and outbreak-associated cases in identifying the last outbreak–related-resident case.

6.2 Review the Outbreak

Meet with the OMT to review management of the outbreak – what was handled well and what could be improved in managing future outbreaks. Recommendations should identify future preventive actions and/or necessary policy/protocol changes. They also should include possible reasons for the outbreak and steps to prevent similar outbreaks in the future. A representative from public health may attend this meeting especially if there were concerns or issues.

6.3 Complete the Outbreak Investigation File

Review the outbreak file to ensure it contains full documentation including:

- Copies of laboratory and other results
- Copies of all minutes and other communications
- All other documents specific to the investigation/management of the outbreak, including notes/line lists
- A summary report

Infection Prevention and Control Staff should store copies of all documents related to the outbreak. Public Health will also maintain file copies of all documents related to the outbreak and will report details of the outbreak to the MOHLTC's Public Health Division via an electronic database.

7.0 INVESTIGATION AND MANAGEMENT OF FOOD-BORNE OUTBREAKS

Although most outbreaks result from the person-to-person spread of a virus, other methods of transmission exist. As a result, the Public Health Unit will investigate the possibility that the microorganism could be spreading through food, water, or through other means.

It is important to note that outbreaks spread from person-to-person still could have started with a point source such as ill kitchen staff, contaminated food, or utensils. Investigation of a food-borne outbreak may be discontinued if, during early stages of an outbreak a confirmed agent is identified and that the causative microorganism is being transmitted person-to-person. The policies and procedures related to the investigation and management of food-borne outbreaks should be integrated into your IPC program.

7.1 Recommended Food Handling Policies and Procedures

Policies and procedures should be developed to cover all aspects of food handling. The Public Health Unit can offer guidance. Implementing appropriate policies and procedures can be instrumental in preventing outbreaks and controlling those that do occur.

Once policies and procedures are in place, consider scheduling regular, in-service training for appropriate personnel and keep a record of the training – date, session name, presenter, training description, names of staff who attended.

Policies and procedures should include those related to food handling staff, records of food suppliers, retention of food samples, temperature records of potentially hazardous foods (PHF), catered food, food brought in by families, common kitchens, feeding assistance, dishwasher temperature/sanitizing records, and kitchen equipment installation and maintenance.

7.1.1 Food-Handling Staff

Staff should be familiar with the exclusion criteria for food handlers outlined in the Infectious Diseases Protocols (2008). Public Health will provide recommendations on the screening of ill staff for enteric diseases if it strongly suspected that the outbreak is food-borne. Depending upon the circumstances, screening of asymptomatic staff may also be considered.

7.1.2 Records of Food Suppliers

Food contaminated early in the food-production process could be widely distributed and thus become the source of many simultaneous outbreaks. LTCHs must maintain accurate records of food suppliers, including emergency contact information. Include suppliers of foods not generally considered potentially hazardous foods, such as fruits and vegetables, as these food items have been involved in outbreaks.

7.1.3 Retaining Food Samples

Although not legislated, consideration should be given to implementing a policy of retaining 200 grams samples of ready-to-eat food items, potentially hazardous foods from each meal (Box 15).

7.1.4 Temperature Records of Potentially Hazardous Food

LTCHs should verify and record the final cooking, reheating, and holding temperatures of potentially hazardous food. The LTCH's policy and procedures should clearly indicate which foods must be monitored and the documentation required.

Improper cooling procedures often cause food-borne illness. We recommend documenting the cooling procedures used for potentially hazardous, prepared-in-advance food items on the menu that are cooled, and reheated before being served. Food-preparation temperature records should be kept in accordance with the LTCH's retention policy, but not less than three months.

7.1.5 Catered Food and Food Brought in by Families and/or Common Kitchens

Often, food prepared off-site is available to residents. You should have clear policies outlining:

- Procedures to be followed if a resident wishes to have one or more meals catered (commercial caterers must be approved by the Public Health Unit)
- The type of food allowed. If potentially hazardous food is brought in, staff should be advised and the food should not be offered to other residents
- The staff who should be notified
- The labeling requirements such as contents, resident's name and date prepared
- Required storage procedures such as location, duration, and holding temperature requirements

Box 15. A Food Retention Policy

Once a potential outbreak has been identified, food samples should not be discarded.

What to include in your food retention policy:

- Types of food to be retained
- Date of production
- Retention period (or date of discard)
- Location of retained food samples
- Type of retention container
- Quantity of food to be retained
- Labeling requirements such as: date, type of food, and time of meal

Food samples should be kept frozen at or below – 18°C for 10 days.

7.1.6 Common Kitchens

Common kitchens must meet requirements of the Food Premises Regulation under the *HPPA*. These kitchens may pose special concerns since they can allow unrestricted access to food supplies that could lead to food contamination. Food Premises Regulation available at:

http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900562_e.htm.

The LTCH's policies must clearly state – and be in compliance with – the Food Premises Regulation. The policies must:

- Clearly define which areas of the kitchen are for the exclusive use of the residents and thus cannot be used as an extension of the LTCH kitchen for food storage
- Require all food stored in the kitchen be labeled – contents, name of resident, and date of preparation/decanting
- State that potentially hazardous food cannot be brought into the LTCH without prior discussion with, and approval from, the appropriate staff – such as the dietary manager
- State that anyone preparing or handling food must follow proper hand-hygiene procedures

7.1.7 Feeding Assistance

The LTCH should have a clear policy stating that:

1. It is the responsibility of those assisting to ensure that their hands – and the resident's hands – are cleaned before and after each meal
2. Staff from external agencies are not to enter the LTCH if they have symptoms of a communicable disease, particularly diarrhea or vomiting

7.1.8 Dishwasher Temperature and Sanitizing Records

Facilities must keep clear records of wash and rinse temperatures for each mechanical dishwasher. If the dishwasher has a low-temperature rinse and relies on chemical sanitizing, sanitizer concentration checks must be performed and documented daily at a minimum. Records must be dated, initialled, and kept on site for at least three months. . The LTCH and Public Health Unit staff should review the records during routine inspections and outbreak investigations.

7.1.9 Kitchen Equipment Installation and Maintenance

Keep records of any equipment that has been installed or repaired. Instructions on how each piece of equipment must be maintained, cleaned, and sanitized, must be readily available.

7.2 Food-borne Illness Investigation

The Public Health Unit is the lead in investigations to identify the source of food-borne outbreaks. These investigations rely heavily on the cooperation and assistance of LTCH staff. The Public Health Inspector or Public Health Nurse may take the following actions once an outbreak has been confirmed and food/water has not been ruled out as the source.

7.2.1 Questionnaires

The collection of information from residents, staff, and others who may have been exposed to contaminated food or water is important in assessing the cause of an outbreak. Case-history information – especially symptoms, onset times and food consumed – often will identify the most likely causative food items and organisms.

7.2.2 Clinical Samples

In addition to collecting samples from ill residents, LTCH staff should be encouraged to submit stool samples if they experience a symptom. In certain circumstances, the Public Health Unit may request stool samples from asymptomatic (not ill) staff as well.

7.2.3 Food Service Operation

To complete the outbreak investigation, the Public Health Inspector will require detailed information on:

- Foods eaten by residents, including foods with altered texture – such as pureed foods How the food was prepared (menus, recipes, and formulations), including records of cold-holding temperatures, final cooking temperatures and hot-holding temperatures, as well as the date and time each item was prepared
- Purchase and inventory records
- Processing records
- Hazard Analysis Critical Control Points (HACCP) plans and records Personnel responsible for each operation
- List of suppliers
- Records of personnel absenteeism due to illness

- Equipment repair/maintenance records
- Dishwashing and utensil washing records
- Cleaning and sanitizing procedures and schedules
- Resident meal seating plans
- Records of bacteriological water sampling and water-supply maintenance if the LTCH is not on a municipal water supply

7.2.4 HACCP Investigation

The Public Health Inspector may decide that an assessment of food preparation using Hazard Analysis Critical Control Points (HACCP) principles is needed. This may require that the LTCH prepare the suspect meal again. The goal of the HACCP-based assessment is to identify faulty food-handling practices at the LTCH, not to identify staff responsible for the outbreak. During the HACCP-based assessment, the inspector may note:

- Temperature control, including storage, cooking, reheating and hot holding temperatures
- Frequency and procedure on how staff wash their hands
- The procedures used for wearing/removing gloves
- Personal hygiene to prevent food contamination when they sneeze or cough
- If staff understand the concept of cross-contamination and are knowledgeable on prevention methods
- If staff are aware of the implications of preparing potentially hazardous food

7.2.5 Provision of Alternative Sources of Food and Water

Until the suspect food has been identified, the Public Health Unit may direct the LTCH to provide food and water from another source. If the LTCH provides food or meals for other organizations, such as Meals on Wheels, the Public Health Unit may instruct it to suspend those services until further notice.

7.2.6 Summary Report

A summary of the food safety investigation should be included in the outbreak investigation report. The summary should detail key inspection findings along with food and/or environmental sample results.

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APPENDIX 1. INSTRUCTIONS FOR FECES SPECIMEN COLLECTION DURING OUTBREAKS

Bacterial, parasitic, and viral agents may produce gastroenteritis. The Enteric Outbreak Kit has been designed for the investigation of these agents simultaneously at the beginning of an outbreak when the causative agent is unknown.

The use of this kit should be limited to the first 10 – 15 specimens collected from symptomatic persons at the onset of the outbreak. The Enteric Outbreak Kit includes three vials, each with a colour-coded cap:

- Green - Bacterial examination
- Yellow - Parasitology examination
- White - Viral and toxin examination

If the outbreak is suspected to be bacterial or viral in nature, do not collect/submit all three vials to the laboratory.

Make sure the laboratory requisition accurately reflects the examinations required. Each Enteric Outbreak Kit includes complete instructions on specimen collection, storage, and transportation. These instructions must be followed or the sample may not be tested.

For detailed information please refer to the Laboratory Guide for Gastroenteritis Outbreaks available at http://www.oahpp.ca/services/documents/specimen-collection-guide/gastro_full_20080301.pdf


Ministry of Health
Ontario
Laboratory Services Branch
ENTERIC OUTBREAK KIT
Kit No. 086316
Date Collected: __/__/__
Onset Date: __/__/__
Outbreak No ____/__/__
Patient's Name
Health No.
Resident
Staff
Sympt.
Asympt.
086316
STOOL CONS
LIQUID
SOFT
IN VITRO DIAGNOSTIC USE ONLY
LOT
NUCLEAR DIAGNOSTICS

Enteric Outbreak Kit

Ontario
Agency for Health Protection and Promotion
Agence de protection et de promotion de la santé

Instructions for the collection and transportation of clinical specimens for faeces cultures.

Obtain supplies, complete requisitions and label specimen vials

1. Remove the appropriate specimen collection vial(s) from the biohazard bag. Do not use expired kits.
2. Complete an "Enteric Disease Investigation Multiple Specimen Submission Form **OR** public health laboratory General Test Requisition". Include the outbreak number which is assigned by the local health unit.
3. On the main kit label located on the biohazard bag, fill in the required information with a ballpoint pen (press firmly). Peel this label off of the bag and place this label on the completed submission form in the area marked;
   - "Label" of the "Enteric Disease Investigation Multiple Specimen Submission Form".

   OR
   - If a public health laboratory General Test Requisition is used, fill in the required information with a ballpoint pen (press firmly).
4. Record the patient name on each of the vials used. Peel off one of the four corresponding kit numbered labels located on the biohazard bag. Place one label on each vial used.
5. Note: The specimen container is required to have the patient's full name and date of collection or two unique identifiers. The information on the specimen must be the same as the name and other identifier on the test requisition. Unmatched or mismatched specimens will not be processed.

Specimen collection

6. Faeces specimens that have been in contact with water in toilet are unacceptable.
   a) Infants/Toddlers (not toilet trained) – Collect faeces sample (bowel movement) from soiled diaper or directly from "potty".
   b) Older Children/Adults – Instruct the patient to defecate into a clean container.

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Place specimen in appropriate container

7. Using the spoon from each vial, select different sites of the faeces specimen, preferably blood, mucus or pus, and transfer to the vials as follows:
   a) Bacteriology - GREEN-capped vial with red-coloured transport medium. A collecting device *(plastic spoon)* is fitted inside the cap. Add 2-3 spoonfuls of faeces. Mix into transport medium. Replace and tighten cap.
   b) Parasitology – YELLOW-capped vial with clear liquid preservative and plastic spoon. Add faeces up to the line indicated. Mix well. Replace and tighten cap.
   c) Virology/Toxin - WHITE-capped vial which is empty with a plastic spoon. Add faeces up to the line indicated. Replace and tighten cap.

Transportation

8. Place all vials in the biohazard bag. Place the completed test requisition in the outside pocket. Do not place the test requisition inside the biohazard bag containing the specimens.
9. Refrigerate specimens immediately. Do not freeze specimens.
10. Send specimens to the local Health Unit or laboratory as soon as possible.

STORAGE - Kits can be stored at room temperature until use. **DO NOT USE EXPIRED KITS.**

TO ORDER KITS or INFORMATION: Contact OAHPP order desk, Public Health Laboratory Toronto @ 416 235-5937 or order by fax @ 416 235-5753 or your local Public Health Laboratory.

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APPENDIX 2. ROUTINE PRACTICES, ADDITIONAL PRECAUTIONS, AND REPORTING REQUIREMENTS FOR SELECTED PATHOGENS OR CONDITIONS ASSOCIATED WITH GASTROENTERITIS OUTBREAKS

(Adapted from PIDAC 2011b). Contact = Contact Precautions; RP = Routine Practices; Infection Control refers to ICP or IPC program members.

ORGANISM OR DISEASE	CATEGORY	TYPE OF PRECAUTION	SINGLE ROOM NEEDED	DURATION OF PRECAUTIONS	COMMENTS
Amoebiasis or Dysentery *Entamoeba histolytica*	Adult	RP	No		-Reportable Disease
	Incontinent or non-compliant adult	Contact	Yes		
Antibiotic Resistant Organisms (AROs) - not listed elsewhere		Contact may be indicated	May be indicated	Precautions, if required, are initiated and discontinued by Infection Control	-See also listings under MRSA and VRE (PHAC 1997, PIDAC 2007)
Ascariasis or Roundworm infection *Ascaris lumbricoides*		RP	No	No person-to-person transmission	
Botulism	**See Food Poisoning/Food-borne Illness**				
***Campylobacter* species**	Adult	RP	No		-Reportable Disease -Notify Infection Control
	Incontinent or non-compliant adult	Contact	Yes	Continue precautions until stools are formed	

Cholera *Vibrio cholera*	Adult	RP	No		-Reportable Disease -Notify Infection Control
	Incontinent or non-compliant adult	Contact	yes		
Clostridium difficile		Contact	Yes	Continue precautions until formed stool for at least 2 weeks	-Outbreaks Reportable -Notify Infection Control. -Laboratory-confirmed cases may be cohorted
Coxsackievirus	See Enteroviral Infections				
Cryptosporidiosis	Adult	RP	No		-Reportable Disease -Notify Infection Control
	Incontinent or non-compliant adult	Contact	Yes		
Diarrhea	Acute infectious	See Gastroenteritis			
	Suspected *C. difficile* diarrhea	See *Clostridium difficile*			
Echinococcosis		RP	No		No person-to-person transmission
Echovirus disease	See Enteroviral Infections				
Enterobiasis or Pinworm Disease *Enterobius vermicularis*		RP	No		Transmission is faecal-oral directly or indirectly through contaminated articles eg., bedding.
Enteroviral Infections	Adult	RP	No		

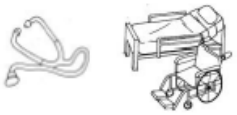
***Escherichia coli* O157:H7**	Incontinent or non-compliant adult	Contact	Yes	Continue precautions until stools are formed	-Reportable Disease -Notify Infection Control
Food poisoning or Food-borne Illness	*Clostridium botulinum* (botulism	RP	No		-Reportable Disease -No person-to-person transmission
	Clostridium perfringins	RP	No		
	Salmonella or *E. coli* O157:H7 in incontinent or non-compliant adult if stool cannot be contained	Contact	Yes	Continue precautions until *Salmonella* and *E. coli* O157:H7 ruled out	-Reportable Disease -Notify Infection Control
	Other causes	RP	No		
Gastroenteritis	Acute infectious	Contact	Yes	Continue precautions until *C.difficile* and Norovirus or other viral agents ruled out	-Outbreaks are reportable -Notify Infection Control -See specific organism if identified
	Incontinent or non-compliant adult	Contact	Yes	Continue precautions for duration of illness	
Giardiasis *Giardia lamblia*	Adult	RP	No		-Reportable Disease

	Incontinent/non-compliant adult	Contact	Yes	Continue precautions until stools are formed	
Hand, Foot, & Mouth Disease	See Enteroviral Infections				
Histoplasmosis Histoplasma capsulatum		RP	No		-No person-to-person transmission
Hookworm Disease or Ancylostomiasis		RP	No		-No person-to-person transmission
Listeriosis *Listeria monocytogenes*		RP	No		-Reportable Disease
Norovirus		Contact	Yes	Continue precautions until 48 hours after resolution of symptoms	-Outbreaks Reportable -Notify Infection Control
Paratyphoid Fever *Salmonella paratyphi*		RP	No		Reportable Disease
Pinworms	See Enterobiasis				
Rotavirus		Contact	Yes	Continue precautions until formed stool	
Roundworm Infection	See Ascariasis				
Salmonellosis *Salmonella* species	Adult	RP	No		-Reportable Disease -Notify Infection Control
	Incontinent/non-	Contact	Yes	Continue precautions until	

	compliant adult		formed stool	
Shigellosis Shigella species	See Gastroenteritis			
Staphylococcal Disease *Staphylococcus aureus*	See Food Poisoning or Food-borne Illness			
Strongyloidiasis *Strongyloides stercoralis*		RP	No	-May cause disseminated disease in immunocompromised
Tapeworm Infection *Diphyllobothrium latum* (fish), *Hymenolepis nana* and *Taenia saginata* (beef), *Taenia solium* (pork)		RP	No	-Autioinfection is possible
Typhoid Fever *Salmonella typhi*		RP	No	-Reportable Disease
Yersinia enterocolitica	See Gastroenteritis			

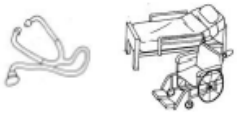
APPENDIX 3. ROUTINE PRACTICES FOR ALL HEALTH CARE SETTINGS UP

(PIDAC 2011b)

ROUTINE PRACTICES to be used with ALL PATIENTS	
	**Hand Hygiene** Hand hygiene is performed using alcohol-based hand rub or soap and water: ✓ Before and after each client/patient/resident contact ✓ Before performing invasive procedures ✓ Before preparing, handling, serving or eating food ✓ After care involving body fluids and before moving to another activity ✓ Before putting on and after taking off gloves and PPE ✓ After personal body functions (e.g., blowing one's nose) ✓ Whenever hands come into contact with secretions, excretions, blood and body fluids ✓ After contact with items in the client/patient/resident's environment
	**Mask and Eye Protection or Face Shield [based on risk assessment]** ✓ Protect eyes, nose and mouth during procedures and care activities likely to generate splashes or sprays of blood, body fluids, secretions or excretions. ✓ Wear within two metres of a coughing client/patient/resident.
	**Gown [based on risk assessment]** ✓ Wear a long-sleeved gown if contamination of skin or clothing is anticipated.
	**Gloves [based on risk assessment]** ✓ Wear gloves when there is a risk of hand contact with blood, body fluids, secretions, excretions, non-intact skin, mucous membranes or contaminated surfaces or objects. ✓ Wearing gloves is NOT a substitute for hand hygiene. ✓ Remove immediately after use and perform hand hygiene after removing gloves.
	**Environment and Equipment** ✓ All equipment that is being used by more than one client/patient/resident must be cleaned between clients/patients/residents. ✓ All high-touch surfaces in the client/patient/resident's room must be cleaned daily.
	**Linen and Waste** ✓ Handle soiled linen and waste carefully to prevent personal contamination and transfer to other clients/patients/residents.
	**Sharps Injury Prevention** ✓ NEVER RECAP USED NEEDLES. ✓ Place sharps in sharps containers. ✓ Prevent injuries from needles, scalpels and other sharp devices. ✓ Where possible, use safety-engineered medical devices.
	**Patient Placement/Accommodation** ✓ Use a single room for a client/patient/resident who contaminates the environment. ✓ Perform hand hygiene on leaving the room.

APPENDIX 4. SIGNAGE FOR ENTRANCE TO ROOM OF A RESIDENT REQUIRING CONTACT PRECAUTIONS IN NON-ACUTE CARE FACILITIES

(PIDAC 2011b)

CONTACT PRECAUTIONS – Non-acute Care Facilities	
	**Hand Hygiene as per Routine Practices** Hand hygiene is performed: ✓ Before and after each resident contact ✓ Before performing invasive procedures ✓ Before preparing, handling, serving or eating food ✓ After care involving body fluids and before moving to another activity ✓ Before putting on and after taking off gloves and other PPE ✓ After personal body functions (e.g., blowing one's nose) ✓ Whenever hands come into contact with secretions, excretions, blood and body fluids ✓ After contact with items in the resident's environment ✓ Whenever there is doubt about the necessity for doing so ✓ Clean the resident's hands before he/she leaves his/her room
	**Resident Placement** ✓ Single room with own toileting facilities if resident hygiene is poor ✓ Door may remain open ✓ Perform hand hygiene on leaving the room or bed space
	**Gown [based on risk assessment]** ✓ Wear a long-sleeved gown for direct care* when skin or clothing may become contaminated
	**Gloves [based on risk assessment]** ✓ Wear gloves for direct care* ✓ Wearing gloves is NOT a substitute for hand hygiene ✓ Remove gloves on leaving the room or bed space and perform hand hygiene
	**Environment and Equipment** ✓ Dedicate routine equipment to the resident if possible (e.g., stethoscope, commode) ✓ Disinfect all equipment before it is used for another resident ✓ All high-touch surfaces in the resident's room must be cleaned at least daily
	**Visitors** ✓ Visitors must wear gloves and a long-sleeved gown if they will be in contact with other residents or will be providing direct care*, as required by Routine Practices ✓ Visitors must perform hand hygiene before entry and on leaving the room

* Direct Care: Providing hands-on care, such as bathing, washing, turning the resident, changing clothing, continence care, dressing changes, care of open wounds/lesions or toileting. Feeding and pushing a wheelchair are not classified as direct care.

APPENDIX 5. HAND HYGIENE FACT SHEET FOR HEALTH CARE SETTINGS

Fact Sheet
Feuille de renseignements
PIDAC Provincial Infectious Diseases Advisory Committee
CCPMI Comité consultatif provincial des maladies infectieuses

Ontario

Hand Hygiene Fact Sheet for Health Care Settings

In health care settings, hand hygiene is the single most important way to prevent infections.

Hand hygiene is the responsibility of all individuals involved in health care. Hand hygiene refers to removing or killing microorganisms on the hands as well as maintaining good skin integrity. There are two methods of removing/killing microorganisms on hands: washing with soap and running water or using an alcohol-based hand rub. Generally, the focus is on microorganisms that have been picked up by contact with patients/health care provider, contaminated equipment, or the environment (transient or contaminating bacteria).

Effective hand hygiene kills or removes microorganisms on the skin and maintains hand health.

ALCOHOL-BASED HAND RUB

Alcohol-based hand rub is the preferred method for decontaminating hands. Using alcohol-based hand rub is better than washing hands (even with an antibacterial soap) when hands are not visibly soiled.

However, hand washing with soap and running water must be performed when hands are visibly soiled. If running water is not available, use moistened towelettes to remove the visible soil, followed by alcohol-based hand rub.

HAND WASHING

Most transient bacteria present on the hands are removed during the mechanical action of washing, rinsing and drying hands. Hand washing with soap and running water must be performed when hands are visibly soiled.

WHEN SHOULD HAND HYGIENE BE PERFORMED?

Hand hygiene must be performed:

- Before and after contact with a patient
- Before performing invasive procedures
- Before preparing, handling, serving or eating food
- After care involving the body fluids of a patient (e.g. assisting patient to blow nose, toileting the patient or doing wound care) and before moving to another activity
- Before putting on and after taking off gloves
- After personal body functions, such as using the toilet or blowing one's nose
- Whenever a health care provider is in doubt about the necessity for doing so.
- When hands accidentally come into contact with secretions, excretions, blood and body fluids (hands must be washed with soap and running water)
- After contact with items in the patient's environment

FACTORS THAT INFLUENCE HAND HYGIENE

The following factors influence the effectiveness of hand hygiene:

- Condition of the skin— intact skin vs. presence of dermatitis, cracks, cuts or abrasions
- Nails: natural nails more than 3-4 mm (1/4-inch) long are difficult to clean, can pierce gloves and harbour more microorganisms than short nails
- Only nail polish in good condition is acceptable
- Artificial nails or nail enhancements are not to be worn by those giving patient care as they have been implicated in the transfer of microorganisms
- Jewellery - rings and bracelets hinder hand hygiene, and should not be worn for patient contact; rings increase the number of microorganisms present on hands and increase the risk of tears in gloves

APPENDIX 6. RECOMMENDED STEPS FOR PUTTING ON AND TAKING OFF PERSONAL PROTECTIVE EQUIPMENT (PPE)

(PIDAC 2011b)

PUTTING ON PPE

1. Perform Hand Hygiene

2. Put on Gown

- Tie neck and waist ties securely

3. Put on Mask/N95 Respirator

- Place mask over nose and under chin
- Secure ties, loops or straps
- Mould metal piece to your nose bridge
- For respirators, perform a seal-check

4. Put on Protective Eyewear

- Put on eye protection and adjust to fit
- Face shield should fit over brow

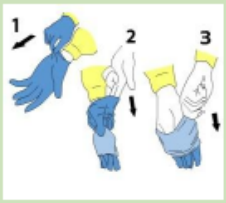
5. Put on Gloves

- Put on gloves, taking care not to tear or puncture glove
- If a gown is worn, the glove fits over the gown's cuff

TAKING OFF PPE

1. Remove Gloves

- Remove gloves using a glove-to-glove/skin-to-skin technique
- Grasp outside edge near the wrist and peel away, rolling the glove inside-out
- Reach under the second glove and peel away
- Discard immediately into waste receptacle



2. Remove Gown

- Remove gown in a manner that prevents contamination of clothing or skin
- Starting at the neck ties, the outer, 'contaminated', side of the gown is pulled forward and turned inward, rolled off the arms into a bundle, then discarded immediately in a manner that minimizes air disturbance

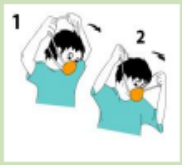
3. Perform Hand Hygiene

4. Remove Eye Protection

- Arms of goggles and headband of face shields are considered to be 'clean' and may be touched with the hands
- The front of goggles/face shield is considered to be contaminated
- Remove eye protection by handling ear loops, sides or back only
- Discard into waste receptacle or into appropriate container to be sent for reprocessing
- Personally-owned eyewear may be cleaned by the individual after each use

5. Remove Mask/N95 Respirator

- Ties/ear loops/straps are considered 'clean' and may be touched with hands
- The front of the mask/respirator is considered to be contaminated
- Untie bottom tie then top tie, or grasp straps or ear loops
- Pull forward off the head, bending forward to allow mask/respirator to fall away from the face
- Discard immediately into waste receptacle



6. Perform Hand Hygiene

APPENDIX 7. DONNING AND REMOVAL OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

Donning and Removal of Personal Protective Equipment

Personal protective equipment (PPE) is designed to protect health care providers in health care settings from exposure to potentially infectious material. When providing care to patients, these products protect the skin and mucous membranes of the eyes, nose, and mouth from exposure to blood, body and respiratory secretions.

Always perform hand hygiene immediately before donning and after removing PPE.

Always don your PPE before contact with patients.

Sequence for donning PPE

- perform hand hygiene
- gown (if applicable)
- mask
- eyewear
- gloves (if applicable)

1. How to don a gown

- opening is in the back
- fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- secure at neck and waist
- if gown is too small, use two gowns: the first ties in front, the second ties in back

2. How to don a mask

- secure on head with ear loops
- place over nose, mouth, and chin
- fit flexible nose piece over bridge
- adjust fit – snug to face and below chin

3. How to don eye protection

- position eyewear over eyes and secure to head using ear pieces

4. How to don gloves

- don gloves last
- insert hands into gloves
- extend gloves over gown cuffs (if wearing gown)

5. How to use gloved hands

- keep gloved hands away from face
- avoid touching or adjusting other PPE
- remove gloves if they become torn; perform hand hygiene before donning new gloves
- limit surfaces and items touched

Sequence for removing PPE

- all items must be removed and discarded carefully
- perform hand hygiene after gloves/gown removal before your hands go near your face (for removal of masks and eye protection) and after completion of PPE removal, and *any time you suspect your hands are contaminated during PPE removal.*

1. Glove removal

- outside of glove is 'dirty'; use glove-to-glove/ skin-to-skin handling method
- grasp outside edge near wrist
- peel away from hand, turning glove inside out
- hold in opposite gloved hand
- slide ungloved finger under wrist of remaining glove
- peel off from inside, creating a bag for both gloves
- discard

2. Gown removal

- gown front and sleeves are 'dirty'; handle by inside/back of gown
- unfasten ties
- peel gown away from neck and shoulder
- turn contaminated outside surface toward the inside
- fold or roll into a bundle
- discard

3. Perform hand hygiene

4. Eyewear removal

- outside of eyepiece is 'dirty'; handle by earpieces
- grasp earpieces with ungloved hands
- pull away from face
- place in designated receptacle for reprocessing

5. Mask removal

- front of mask is 'dirty'; handle by ear-loops
- remove from face, in a downward direction, using ear-loops
- discard

6. Perform hand hygiene immediately after removing PPE.

For more information:
Visit our website at www.health.gov.on.ca/pandemic or call the Health Care Provider Hotline 1-866-212-2272. This phone line is open 24 hours a day, seven days a week.

Ontario

APPENDIX 8. CLEANING CHECKLIST FOR AN ILL RESIDENT'S ROOM DURING AN OUTBREAK

CHECKLIST FOR DAILY CLEANING:
Use a fresh bucket, cloths and mop head. Always work from the cleanest areas to the dirtiest areas.

( ) Walls – check for visible soiling and clean if required

( ) Clean all horizontal surfaces and "touched" areas (tables, bed rails, call bells, work surfaces, mattresses/covers, doorknobs, sinks, light fixtures, chairs, phone, TV controls, soap dispensers)

( ) Clean bathroom, working from sink area to toilet area

( ) Clean floors

CHECKLIST FOR DISCHARGE CLEANING (TERMINAL CLEANING):

( ) Remove all dirty/used items (e.g. suction container, disposable items)

( ) Remove curtains before starting to clean the room

( ) Discard and replace the following:

- Soap
- Toilet paper
- Alcohol based hand rub
- Glove box
- Sharps container

( ) Use clean cloths, mop, supplies, and solution to clean the room

( ) Fill one bucket with the disinfectant so it is the correct strength

( ) Check to see if the mattress, pillows, and chairs are torn

( ) Report damaged items to your supervisor to have them replaced/repaired

( ) DO NOT RE-USE CLOTHS: Use several cloths to clean a room. Use each cloth only once. Do not dip a cloth back into disinfectant solution after use and re-use it on another surface

( ) Always work from top to bottom and clean area to dirty

( ) Clean all surfaces and allow the disinfectant appropriate contact time with:

1. Mattress
2. Pillow
3. BP cuff
4. Bedrails and bed controls
5. Call bell
6. Stethoscope and column

7 Flow meters

8 Suction tube and outer container

9 Pull cord in washroom

10 Over-bed table

11 Inside drawers

12 TV controls

13 Soap dispenser

14 Door handles

15 Light switches

16 Light cord

17 Chair

18 Phone

19 Clean the following (and any other items that might be used on another resident) thoroughly before they are used by another resident

20 Commodes/high toilet seat

21 Wheelchairs

22 Monitors

23 IV poles

( ) Replace the sharps container when it is 2/3 full

( ) Clean the outer canister of the suction container and red tubing

( ) Remove all tape from the surfaces

( ) Wash the sheepskin between residents

( ) Wash the lift mesh or sheet between residents

APPENDIX 9. SAMPLE SCREENING-POLICIES SIGN TO USE DURING OUTBREAKS

The spread of germs that make you and others sick

Do not visit if you have a:

Cough Sneezing

Fever Cold

Diarrhea

Vomiting

Clean your hands with alcohol-based hand rub:

- **when you arrive**
- **before leaving**
- **after coughing, sneezing or blowing nose**

APPENDIX 10. SAMPLE SURVEILLANCE SHEET

List for Residents: □ Employees: □ (check one)

Name:_____ Address: _____

Contact Person:_____ Telephone: _____

				Onset and Timing Symptoms					Signs and Symptoms												Lab Results		
NAME	Date of Birth (Optional)	Sex (Optional)	Room Number	Date of Onset	Time of Onset	Shift of Onset	Date/Time of Last Episode	Duration of Illness										Hospitalized (Y/N)	Admission Date to Hospital	Discharge Date from Hospital	Death (Date)	Bacterial (Date)	Viral (Date)	Serology - acute (Date)	Serology - convalescent (date)

APPENDIX 11. QUICK REFERENCE GUIDE: SUSPECTED OUTBREAK

This list has been compiled as a quick reference for your convenience. Some of these recommendations could require modifications due to particular situations. Please refer to the complete text for additional details. Implement any other measures deemed appropriate by your Infection Prevention and Control Professional or the local Public Health Unit.

1. Notify Public Health

When 2 or more cases of suspect gastroenteritis occur within 48 hours. Remember the case definition for a **Suspected Gastroenteritis Outbreak:** two suspected cases of infectious gastroenteritis in a specific area, such as a home, unit, or floor within 48 hours.

2. Implement Infection Prevention and Control Program

Isolation

- Confine ill residents to their rooms until at least 48 hours after symptoms have disappeared
- Exclude any ill employees from work until at least 48 hours after symptoms have disappeared
- Do not transfer well residents into a room with an ill resident
- Do not admit new residents to the affected unit/floor
- Do not re-admit residents who have not been line listed in the outbreak
- You can re-admit residents who met the case definition
- Suspend communal meetings and other activities in the outbreak area
- Notify hospitals, other institutions, EMS and other persons or agencies listed in *4.2.5*
- Use cohort nursing or similar practices to reduce the potential of spread from ill to well residents

Personal Protection

- Post signs advising visitors of the outbreak and the appropriate personal precautions they should take
- Use gloves when caring for a resident who is incontinent of stool and has soiled themselves and their environment
- Wear a gown if there is a strong possibility that clothing may become soiled
- Use a mask and eye goggles or shield to protect the face from splashes if a resident has explosive diarrhea or projectile vomiting
- Persons cleaning areas heavily contaminated with vomitus or feces should wear surgical masks
- Review hand-hygiene procedures with all staff, including volunteers
- Environment – for more information see Appendix 12
- Increase the frequency of routine cleaning. Assume any and all frequently touched surfaces – door handles, railings, elevator buttons, tables, counters etc. – are contaminated
- If possible, dedicate equipment to a particular symptomatic resident. If equipment must be shared, it must be cleaned and disinfected between residents.
- Clean then disinfect or discard equipment before it is taken from the resident's room
- Clean and disinfect vomit and feces spillages promptly.
- If you are cleaning up vomit or diarrhea, you can reduce the risk of being infected by:
    - Wearing disposable gloves is recommended.
    - Using paper towels to soak up excess liquid, and putting the paper towels and any solid matter directly into a plastic garbage bag

  - Cleaning the soiled area with soap and hot water. The same cleaning cloth or sponge should not be used to clean other areas as this may spread the virus
  - Putting all cleaning cloths and disposable gloves into a plastic garbage bag
  - Washing hands well using soap and warm water for a minimum of 15 seconds.
  - Reference: http://www.bchealthguide.org/healthfiles/hfile87.stm
- Using care to avoid creating splashes or aerosols during clean up
- Immediately covering spillage with dry disposable paper towels
- Wearing appropriate personal protective equipment (gloves and gowns, and masks if splashing anticipated)
- Cleaning the area using disposable paper towels to remove all vomit and feces. Discarding used paper towels into plastic lined garbage
- Removing all organic matter before disinfecting the area. Then disinfecting the area using a freshly prepared hypochlorite solution (1 part bleach to 9 parts water), or accelerated hydrogen peroxide or hospital grade disinfectant. Household cleaners other than bleach do not work for most of the viruses that cause vomiting and diarrhea
- Allowing appropriate contact time. Wiping area dry. Removing personal protective equipment. Washing hands.
- Cleaning contaminated carpets and soft furnishings with hot water and detergent, or steam clean. Vacuum cleaning is not recommended
- Terminal cleaning the resident environment when resident has been asymptomatic of gastroenteritis symptoms for 48 hours
- Handling soiled laundry as little as possible, with minimum agitation, and transporting it in closed bags, prior to washing and drying

Surveillance

- Maintain detailed surveillance and updated line lists (Appendices 11 and 14)
- Advise Public Health daily of new cases and other changes to the line list
- Update case definition as appropriate
- Collect stool specimens using outbreak kits provided by Public Health (Appendix 8)
- Advise Public Health when you have samples ready to ship
- Refrigerate (4°C) specimens until shipped, unless otherwise advised by Public Health

APPENDIX 12. STEPS IN THE PREVENTION AND MANAGEMENT OF GASTROENTERITIS OUTBREAKS

STEP	COMPONENT
1. Prevention Policies	Policy Preparation
	General
	Food
	Routine Practices and Additional Precautions
	Infection Prevention and Control Committees
	Education
	Food Handling Practices
2. Preparation	Outbreak Preparedness
3. Surveillance	Surveillance
4. Identification	Outbreak Detection
	Infectious Gastroenteritis Case Definition
	Outbreak Definition
	Suspected Gastroenteritis Outbreak Definition
	Gastroenteritis Outbreak Definition
5. Outbreak Management	1. Assess the Outbreak
	2. Implement General Outbreak Control Measures
	3. Consult with the Public Health Unit
	4. Declare an Outbreak
	5. Notify Appropriate Individuals/Agencies
	6. Hold an Initial Outbreak Management Team Meeting
	7. Monitor the Outbreak on an Ongoing Basis
	8. Declare the Outbreak Resolved
	9. Complete the Outbreak Investigation File
	10. Review the Outbreak

APPENDIX 13. GASTROENTERITIS OUTBREAK: SAMPLE LINE-LISTING FORM

for Staff ❑ for Residents ❑ Date Reported to Health Unit:_____ Onset date of first case: _____ Outbreak: - __-__

Institution Name:_____ Address:_____Contact Person: _____ Phone: _____ Fax: _____

Causative Agent Isolated: _____Public Health Investigator: _____Phone:_____ Fax: -_____

Case definition:

_____

_____

#	Last name	First name	Age	Sex	Occupation / Room	Diet	Onset date (d/m/y)	Symptoms*** (use legend below)					Specimen			Hospital * date (d/m/y)	Death** date (d/m/y)	Comments
													Date	Type	Results			

* hospitalized – admitted into a hospital due to outbreak, other hospitalizations should be recorded under comments. –Symptoms: D = diarrhea; N= nausea; V= vomiting, F= fever; H=headache, A=abdominal cramps Record name only once on the line listing form

APPENDIX 14. POSITION STATEMENT: RECOMMENDED LENGTH OF EXCLUSION FOR CASES ASSOCIATED WITH *NOROVIRUS* OUTBREAKS AND WHEN TO DECLARE *NOROVIRUS* OUTBREAKS OVER

Enteric, Zoonotic, and Vector-Borne Disease Unit
Public Health Division
Public Health Protection and Prevention Branch
Ministry of Health and Long-Term Care
September 2010

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BACKGROUND TO ISSUE

Over the past few years, the Ministry of Health and Long-Term Care (MOHLTC) has received numerous requests from local public health units regarding extending the exclusion period for ill staff of high-risk settings suspected of having *Norovirus* from 48 to 72 hours after symptom resolution. Likewise, the MOHLTC has been requested to clarify the time required to declare outbreaks of Norovirus over.

While *Norovirus* is generally a mild and self-limited disease, deaths and other complications have occurred as a consequence of *Norovirus* infection. The greatest burden of illness occurs in the institutionalized elderly. This emphasizes the need for a consistent approach to *Norovirus* outbreak management.

CURRENT STATUS

Currently, most jurisdictions rely on evidence in the scientific literature and working groups' decisions to inform their guidelines and best practice recommendations for *Norovirus*. The exclusion period currently used by many health units in Ontario is 48 hours. Criteria for declaring outbreaks over vary among Ontario jurisdictions with a range of 2 to 6 days after cessation of symptoms in the last resident case. These discussions and varying criteria highlight the need for a review of recommendations by the MOHLTC along with the development of a policy statement that can be applied consistently across Ontario.

PERIOD OF EXCLUSION

Summary of the Literature and Jurisdictional Scan

The majority of pre-1994 literature indicate Norovirus shedding occurs up to 48-72 hours after recovery (cessation of symptoms), including 24-48 hours,[3] 48 hours,[4,5] and 48-72 hours[6]. Based on this research, the standard exclusion period for cases in high-risk settings of Norovirus has been 48 hours after cessation of symptoms.[7,8] High-risk settings include hospitals, nursing homes, food service establishments, and day nurseries.

Post-1994 literature indicates that Norovirus shedding occurs past the traditional 48-72 hour period, including 10 days[9] and approximately 14 days, primarily because more sensitive laboratory testing methods became available.[10] In a study authored by Robert L. Atmar et. al, using reverse transcription-PCR testing after experimental human infection, virus particles were detected in fecal samples 18 hours after inoculation and lasted a median of 4 weeks up to 8 weeks.[11] While viral shedding can occur for extended periods especially in immuno-compromised individuals, peak viral load in stool is highest in the first 25 to 72 hours post inoculation.[12] However the relationship between the amount of viral shedding and transmissibility has not been established. The relationship between shedding and transmissibility requires further study[13].

The majority of jurisdictions examined employ a 48-hour exclusion policy. The policy is accepted across Canada including British Columbia and Newfoundland. Exclusion policies vary in the USA: 24 hours in California, 48 hours in Wisconsin, and 72 hours in Florida. Countries using a 48-hour exclusion policy include: Australia, Ireland, New Zealand, and the United Kingdom. While most jurisdictions use the 48-hour policy, very few base their policies on the scientific literature.

Recommendation: Period of Exclusion
Symptomatic staff associated with a *Norovirus* outbreak should be excluded for a **minimum** of 48 hours after symptom resolution.

Staff – Anyone conducting activities within an institution that will bring him/her into contact with residents. This includes all health care providers, support services such as housekeeping, food handlers, volunteers, and contract workers.

DECLARING A NOROVIRUS OUTBREAK OVER

Summary of the Literature and Jurisdictional Scan
The literature regarding when to declare a *Norovirus* outbreak over is scant, with very few recommendations based on scientific literature. Recommendations made by most jurisdictions are presumably based upon the advice of their respective expert and working groups. The World Health Organization recommends to "…declare the outbreak over when the number of new cases has returned to background levels."[14]

The decision of when to declare a *Norovirus* outbreak over varies greatly across jurisdictions. Health units in Ontario use time periods of 2 to 6 days. In British Columbia, Fraser Health and the BC Provincial Infection Control Network declare a *Norovirus* outbreak over after 3 days have elapsed since the last resident case has resolved.

Recommendations: Declaring a *Norovirus* Outbreak Over
Traditionally, for other disease outbreaks, the outbreak is declared over when one incubation plus one period of communicability have passed with no new cases identified. Following this process, outbreaks of *Norovirus* can be declared over when there are no new cases after five days (one incubation period (2 days) plus one period of communicability (3 days)). Criteria for declaring a *Norovirus* outbreak over may be modified by the health unit in collaboration with the Outbreak Management Team where applicable.

Note: It is the responsibility of the Medical Officer of Health or his/her designate to declare a *Norovirus* outbreak over. Declaring the outbreak over should be based on epidemiology of the outbreak in conjunction with conducting a risk assessment. Epidemiological evidence should indicate that the outbreak is under control, infection prevention and control measures have been appropriately applied and adhered

to, and that the number of cases has diminished to baseline levels. Further, the risk assessment supports that decreasing some of the control measures will not prolong the outbreak nor compromise the well-being of the residents/patients, visitors or staff. For *Norovirus* outbreaks in long-term care homes, the decision to declare an outbreak over must be consistent with the recommendations outlined in *A Guide to the Control of Gastroenteritis Outbreaks in Long-Term Care and Retirement Home Settings* (MOHLTC 2010, pending publication). The occurrence of a single case with symptoms of gastroenteritis within the 5 day period should be investigated to determine if this is a single sporadic case, or linked with others.

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APPENDIX 15. EPIDEMIOLOGY OF SELECTED PATHOGENS ASSOCIATED WITH GASTROENTERITIS OUTBREAKS

AGENT	EPIDEMIOLOGY	INCUBATION PERIOD	SYMPTOMS
BACTERIAL			
Clostridium difficile	A leading cause of nosocomial diarrhea in hospitals and nursing homes	Variable	Watery diarrhea, fever, loss of appetite, nausea, abdominal pain/tenderness
Bacillus cereus	A well recognized cause of food poisoning	1-6 hours where vomiting is predominant (toxin); 6-24 hours where diarrhea is predominant (infection)	An intoxication characterized in some cases by sudden onset of nausea and vomiting, in others by colic and diarrhea
Campylobacter spp. Verotoxigenic *E.coli* (0157:H7), plus other VT types Enteropathogenic *E. coli* Enterotoxigenic *E. coli,* Enteroinvasive *E. coli* *Salmonella* spp. *Shigella* spp. *Vibrio cholerae* and other spp. *Yersinia enterocolytica* and other spp.	Highest incidence is usually during spring and summer months	Varies with the organism; on average, 6 hours to a few days	Gastrointestinal upset, (bloody feces may be associated with *Campylobacter* spp. and certain enterotoxigenic *E. coli* including *E. coli* O157:H7)
Clostridium botulinum	Human botulism is a serious but relatively rare intoxication caused	Neurological symptoms usually appear within 12-36	Early symptoms and signs are marked by fatigue, weakness and

	by potent preformed toxins produced by *Clostridium botulinum*	hours.	vertigo usually followed by blurred vision, dry mouth, and difficulty in swallowing and speaking
Clostridium perfringens	A well recognized cause of food poisoning	≈ 10-12 hours	Intestinal disorder characterized by sudden onset of colic followed by diarrhea. Nausea is common. Vomiting and fever are usually absent
Staphylococcus aureus	Preformed toxin	≈ 2-4 hours	An intoxication of abrupt and sometimes violent onset, with severe nausea, cramps, vomiting, and prostration, often accompanied by diarrhea
PARASITIC			
Cryptosporidium parvum	Worldwide occurrence	Not precisely known; thought to be 1-12 days with average of 7 days	Diarrhea, abdominal pain; more severe in immuno-compromised patients (duration up to 30 days)
Cyclospora cayetanensis	Worldwide occurrence; Ontario outbreaks food-related	≈ 7 days	Watery diarrhea, anorexia, weight loss, abdominal cramping, and flatulence (duration variable up to 4 weeks)
Giardia lamblia	Worldwide occurrence; high prevalence in daycare centers where children are not toilet trained	3-5 days; median 7-10 days	Chronic diarrhea, abdominal cramping, bloating, and weight-loss (duration of 2-6 weeks)

VIRAL			
Astrovirus	Entire year. Mainly infects small children and the elderly	1-2 days	Diarrhea (duration 1-14 days)
Caliciviruses, including Norwalk-like viruses and Sapporo-like viruses	Winter, early spring. Most common cause of diarrhea in adults	1-2 days	Diarrhea, vomiting, and fever (duration 24-60 hours)
Enteric Adenovirus (types 40, 41)	Entire year Most common in young children	5-10 days	Watery Diarrhea, vomiting, fever (duration of 1-7 days)
Enterovirus	Late summer, fall. Most common in infants and young children	3-7 days	Diarrhea, rash, low grade fever (duration of up to 14 days)
Rotavirus	Late winter, early spring; infects primarily children; can cause nursing home outbreaks	2-3 days	Fever, vomiting, and diarrhea (duration of 3-9 days)
Other viruses including Torovirus and Picobirnaviruses	Not well studied. Children and adults including immunosuppressed patients	Not well established	Persistent and acute diarrhea in children