1.0 Background

Gastrointestinal illness (GI) and GI outbreaks in child care facilities (CCF) may be caused by a variety of bacterial, viral and parasitic pathogens, including: norovirus, rotavirus, *Salmonella*, shigatoxigenic *E. coli* and *Shigella*. Transmission of pathogens in CCF is typically propagated by person to person spread, however could also be caused by contaminated food, water or environmental surfaces. Outbreaks in CCF may be of increased significance because factors such as frequent toileting and diapering, increased mouthing of objects, frequent hand to mouth contact, poor handwashing, inadequate hygiene of environmental areas and the presence of symptomatic children can lead to higher rates of transmission [1,2,3,4,5,6]. Children are a more vulnerable population at increased risk of serious outcomes such as dehydration, hospitalization and HUS. GI symptoms vary from mild to severe depending on the pathogen causing illness. Typical GI symptoms include, nausea, vomiting, diarrhea, fatigue, and abdominal cramping, however some pathogens cause more serious symptoms such as fever or blood in the stool and can lead to serious complications. [7]

Guidelines for enteric outbreaks in CCF have been recommended in outbreak reports and research with CCF staff in Canada [4,6,8,9]. Guidelines for CCF and the management of enteric outbreaks exist in other jurisdictions[10,11,12,13,14,15]. In BC, the development of guidelines for CCF was identified as a priority by the BC Enteric Policy Working Group. An environmental scan with public health professionals in BC identified support for this initiative.

2.0 Purpose

The purpose of this guideline is to assist public health officials (Licensing and Health Protection) improve prevention and management of GI illness and GI outbreaks in licensed CCF in order to reduce GI illness.

This document outlines general prevention and control measures which may be applied to all GI illness situations in CCF. However there may be different levels of public health action and involvement based on the suspected pathogen or situation. Consultation between public health staff and/or the Medical Health Officer (MHO) and the CCF may lead to investigative actions; these are also outlined in this document.

This guideline was developed for public health officials working with licensed CCF. However the resources and guidance could be applied to other facilities at the discretion of the Health Authority (HA).

The MHO may choose to exercise his/her discretion outside the recommendations of these guidelines.

3.0 Definitions

3.1 Suspect GI outbreak[a]

In all CCF:

Three or more cases of GI (in a child or staff) within a program group[b] in a 3 day period
OR
One or more case(s) of a reportable enteric disease

In CCF with greater than 10 children:

Three or more cases of GI (in a child or staff) within a program group[b] in a 3 day period
OR
One or more case(s) of a reportable enteric disease
OR
Greater than 10% absenteeism above baseline due to GI illness within the program on one day

3.2 Gastrointestinal illness

At least one of the following in an individual (child/staff):

- Three or more episodes of diarrhea within a 24 hour period OR
- Any episode of unexplained vomiting OR
- Any episode of bloody diarrhea OR
- Lab confirmation of a known GI pathogen

3.3 Diarrhea

Loose or watery stool which would take the shape of a container and is unusual for the individual.[c]

RATIONALE

A review of the literature and international guidance demonstrates that there is no standard for defining a GI outbreak in a CCF setting. The definition used here was selected based on a number of considerations.

1. The current guidance[16] in BC defines an outbreak as 3 cases in 4 days for health care facilities. The definition used here will keep the number of cases consistent with this previous guidance.
2. Other documents used in BC (e.g. Sneezes and Diseases) define an outbreak as 3 cases in a short period of time which would be comparable to this proposed definition and ensure consistency with this document.
3. Other guidance documents for outbreak management in CCF use definitions of outbreak that include 2-3 cases and the timeframe is variable or not stated explicitly.

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[a] Only cases of GI which are identified when the child/staff are in the CCF are included in this definition. Cases reported on weekends, in the evenings or by parents notifying the centre of absence due to illness are not included (*see Rationale*). However, since lab reported cases will not be identified at the CCF, if these cases are reported, they should be included.

[b] Group of individuals who spend the majority of their day together (e.g. age groups)

[c] Not associated with known non-infectious causes such as changes in diet, medication, or other known chronic health conditions.

4. Use of a three day timeframe in the proposed definition will balance a very sensitive definition with using a timeframe of 4 days to accommodate resources available within the HA to respond to outbreaks.
5. When this definition is applied to published epi curves from outbreaks, public health notification and action would occur in a timely fashion.
6. The three day timeframe is also proposed due to the recommendation that the outbreak definition is only applied to cases occurring in the CCF (not evenings or weekends or based on attendance) and that a 4 day timeframe will have the potential of more often extending over a weekend period and a delay in outbreak notification.

Only cases of gastroenteritis occurring in the centre will be included as part of the outbreak definition for the following reasons:

1. Staff of CCF will not need to rely on collecting and interpreting information from parents or guardians.
2. Inclusion of all cases of GI illness may potentially overwhelm public health resources, particularly during the winter months when children may be exposed in multiple locations within the community.
3. Based on anecdotal evidence and previous history of investigating outbreaks in CCF, only including cases in a CCF will still lead to a timely response and appropriate interventions.
4. An attendance form to collect information on absenteeism and possibly reasons for absence related to GI illness is already used.

4.0 Monitoring for Enteric Illness and Notification to Public Health

4.1 Legal record-keeping requirements

Under the *Child Care Licensing Regulation* section 55, a licensee must inform the MHO if it comes to his/her attention that a child has a reportable communicable disease as listed in Schedule A and B of the Public Health Act, *Communicable Disease Regulation* and if a child is involved in a reportable incident, such as an outbreak, as listed in Schedule H of the *Child Care Licensing Regulation.*

Daily attendance records and a log of illness are required by the *Child Care Licensing Regulations.* These are outlined under Section 57.2.c: “Daily attendance record, indicating for each day whether the child is absent or, if the child is present, the time of arrival and departure.” and Section 56.f “a log of minor accidents, illnesses and unexpected events involving children, that did not require medical attention and were not reportable incidents described in Schedule H”.

CCF may collect additional information such as a daily attendance record which includes additional information (e.g., reason for absence such as illness, including symptoms if known) or an enteric illness monitoring form to collect information on children presenting with symptoms of gastroenteritis in the CCF.

4.2 Triggers for CCF staff action and notification to public health

When monitoring procedures have identified cases of GI, a triage approach to recommended action and notification is suggested to ensure timely and efficient management. When one or two cases of GI illness are identified, CCF staff:

- Where applicable, notify other staff and the facility manager in the CCF to increase awareness
- Ensure routine cleaning and hygiene protocols are in place with special emphasis in areas where an ill child has been in order to prevent further transmission
- Emphasize proper hand hygiene for all staff and children. Review attendance log for absenteeism due to GI illness to determine if there are additional cases

When a suspect GI outbreak is identified, CCF staff:

- Report to Licensing Officer or designate as soon as possible within 24 hours by phone
- Complete Incident Report and forward to the Licensing Officer
- Increase cleaning and disinfection of toileting and high touch areas using appropriate materials (Appendix 1 and 2)
- Emphasize proper hand hygiene for all staff and children

Based on further assessment with public health:

- Communicate with parents about the illness/suspect outbreak
- Maintain communication regarding enteric illness and appropriate interventions within the centre
- Implement appropriate exclusion of ill individuals

If three cases occur in greater than a three day period, staff of the CCF continues to monitor for symptoms in other children, and then contact public health if and when the trigger level for a suspect outbreak is reached.

As necessary, events can be referred by the Licensing Officer to the CD Unit/Environmental Health Officer. Based on further assessment, the CD Unit/Environmental Health Officer may take additional actions (e.g., discuss situation with CCF to ensure management and intervention, determine whether further investigation is warranted and lead such an investigation, collect further information such as menus and forms).

RATIONALE
Monitoring of enteric illness in CCF has been recommended by multiple authors and public health organizations [3, 4, 6, 10, 17, 18, 19]. Carabin *et al* demonstrated that observing and recording illness in CCF reduces the incidence of GI illness[19]. It permits early detection of enteric illness/outbreaks and early implementation of control measures in CCF, including cleaning and disinfection and exclusion of ill children and staff [3, 4, 6, 10, 17, 18]. Monitoring has also been documented as an effective way to encourage ongoing hand and environmental hygiene[20]. Various authors have stated that notification and involvement of public health authorities leads to appropriate consultation, assessment and advisement in order to ensure the appropriate control measures are implemented in a timely fashion [8, 10, 17, 21].

5.0 Sampling

Lab sampling should be based on public health assessment of the situation and at the discretion of the MHO. In certain circumstances (e.g., suspected viral pathogen) these activities may not be necessary.

Information on sample collection can be found:
http://www.phsa.ca/NR/rdonlyres/D632D356-8E8F-4917-BC3D-463EB5F8A14B/0/GuidetoProgramServices.pdf

RATIONALE
Lab testing can be of assistance in order to confirm an outbreak organism, help to determine source of contamination or guide management (e.g., screening and exclusion) [4, 6, 8, 17, 18]. However, testing should be balanced with the consideration of cost of testing, clinical significance and testing capacity[22].

6.0 GI Prevention and Management

The following control measures should be in place within a CCF as routine practice. These practices should be reviewed by public health with CCF staff and enhanced in the event of GI illness.

6.1 Hand hygiene

Hand hygiene is the most effective way to prevent and manage transmission of GI illness and should be used at all times.

Hand-washing by children/staff/visitors is recommended:

- Whenever hands are visibly soiled or there has been contact with stool
- After using the toilet or assisting a child with toileting or diapering, including all infants who should have their hands washed for them

- Before eating
- Before and after handling or preparing food

Hands should be washed with soap and warm running water at a sink and dried with disposable single-use towels. Communal basins or towels are not recommended.

Alcohol-based hand sanitizer (containing at least 60% ethyl alcohol is recommended as opposed to others which contain isopropyl alcohol) can be used as an alternate for hand washing when access to running water is limited and if hands are not visibly soiled. These products should only be used under supervision by CCF staff. Alcohol-based hand sanitizers may have limited effect against some enteric pathogens. Soap and water is the preferred method of hand hygiene.

6.2 Environmental cleaning and disinfecting

A routine protocol for all environmental cleaning should be in place in CCF. On a routine basis all surfaces, including floors, walls, linens, toys and common areas and high touch areas (e.g., door knobs, rails, chairs, and ledges) should be cleaned and disinfected using approved products. During a suspect or confirmed outbreak cleaning and disinfection of toileting and high touch areas should be increased using appropriate materials (Appendix 1 and 2).
A complete cleaning and sanitizing of a CCF at night or over a weekend when children are not present may be necessary to help prevent transmission of illness.

6.3 Cleaning up diarrhea or vomit

When a vomit or diarrhea spill occurs, all standard cleaning and disinfecting precautions apply (Appendix 3), including:

- The use of personal protective equipment (PPE) as required
- Ensuring spills are cleared up before the area is cleaned and disinfected
- Cleaning procedures should attempt to avoid the generation of aerosols from the spill
- Make the area where the spill occurred immediately off limits to all children and staff in the CCF.

If a vomiting or diarrhea incident or spill occurs, the room may be vented by opening outside windows and doors.

The creation of a spill kit for use by CCF staff that includes the required PPE and equipment to clean up and disinfect the area where the spill occurred is encouraged.

6.4 Food Safety

Appropriate food safety measures should be in place and should be reviewed during periods of GI illness or investigation.

- Food that has been handled by an ill individual or in an area where aerosolized droplets may have occurred should be disposed of.

- Food and drinks should not be shared between individuals in the CCF.
- Minimize food handling done by multiple individuals.
- Ensure appropriate hygiene, food handling and sanitizing during food preparation.

6.5 Exclusions

Cohorting and removal of ill individuals for the CCF

- Immediately isolate any symptomatic child or staff from the CCF
  - Move the child to a separate area away from contact with other children until they are excluded from the CCF. If possible, the child should use a separate washroom facility and be cared for by staff that have no or minimal contact with other children.
- Notify family member/guardian.

If illness is confined to one program, separate program from others in the CCF as suggested in points above.

Exclusion

Exclusions should be implemented as per the Exclusion of Enteric Cases and their Contacts from High Risk Settings Guideline. The full guideline is accessible at http://www.bccdc.ca/dis-cond/comm-manual/CDManualChap1.htm

6.6 Limits on activities and visitors

Based on the public health assessment, additional restrictions to activities and/or visitors may assist in reducing the potential for further transmission of disease. The following may be considered in these situations:

- Modify or limit participation in regular community activities (e.g., trips to the community pool) or special events (e.g. group birthday parties) to limit the potential transmission of illness
- Post signs at the entrance(s) of the CCF indicating that the facility is experiencing an increase in diarrheal disease, with information about the precautions
- Notify visitors or volunteers to take appropriate precautions (e.g., hand hygiene or postponing visit)
- Stop using communal play areas (e.g., water or sand) that pose a challenge to disinfect.

6.7 Closing a facility

During a serious GI outbreak, an MHO may indicate that a CCF should be closed temporarily. It is also recognized that a CCF may occasionally choose to close voluntarily for a temporary period if the number of ill staff and children make it logistically impossible or unfeasible to operate.

The following criteria may be taken into consideration:

- Number of ill individuals
- Pathogen (suspected of confirmed)
- Severity of illness

- Rapidity of spread
- Effectiveness of control measures
- Potential for illness to spread to other CCF
- Inability to adequately staff the CCF
- Others as determined by the MHO

If a CCF is closed temporarily, the importance of keeping ill children at home and not sending their children to other CCF or alternate public child care locations should be discussed with parents and the CCF. The decision to re-open a CCF should be made in consultation between the CCF and public health. In situations when an outbreak has been declared by the MHO, the MHO may declare an outbreak over when no new reports of gastroenteritis within the CCF for two incubation periods (for a known agent) since the last day any symptomatic child was present in the CCF. When the agent is unknown an incubation period of 48 hours could be used or another period as recommended by public health.

RATIONALE

Hands have been identified as an important source of fecal contamination in CCF [23] and hand hygiene has been shown to be an effective intervention for managing diarrhea and outbreaks[10, 17, 20, 22 ,24, 25, 26 27, 28, 29].

Maintaining a clean and hygienic environment has been documented as an important routine practice but also as an effective control intervention for GI illness and outbreaks[3,4,6 8, 10, 17, 20, 21, 25]. Appropriate diapering facilities, sinks/faucets, floors and cleaning of these areas have been emphasized [8, 22, 23, 26, 27]. Emphasis on toy cleaning [8, 21, 23, 25, 27] and removing sand and water play areas[6] have also been suggested.

Safe food handling in CCF has been shown to prevent GI illness and outbreaks [8, 10, 17, 22, 26].

Exclusion and cohorting of symptomatic individuals from CCF have been documented as an effective intervention in outbreaks of *E. coli* O157:H7 [2, 3, 4, 6, 8, 18] shigellosis [21], norovirus[30] and for managing diarrhea [10, 17, 22, 24, 25].

Closure or consideration of closing a CCF as an appropriate intervention for enteric outbreaks has been identified in the literature as having impact [4, 6, 8, 17, 22].

The BC Enteric Policy Working Group recommended the use of two incubation periods since the last day any symptomatic child was present in the CCF for declaring an outbreak over for the following reasons:

- This date would likely be closer to the onset date of the last case than the date of last symptoms for that case.
- This date would be easier for staff of the CCF to monitor than the date of last symptoms and would not require additional information or interpretations of symptoms, etc. from parents.
- Would allow public health to declare an outbreak over in the CCF while those who are symptomatic remain excluded from the CCF.

Appendices

APPENDIX 1: Recommended disinfectants/sanitizers and their use

- Household Bleach (5.25% hypochlorite)
    - Bleach should be mixed to make a 1:50 solution for disinfection purposes (for example, add 80 ml to 4 litres of warm water; 1/3 cup of bleach to a gallon of water).
    - Allow the surfaces to air dry after application to achieve the required contact time.
    - Bleach is a corrosive product and should not be mixed with other cleaning products
    - The bleach solution should be made within the previous 24 hours (or freshly prepared) to be most effective.
- Accelerated hydrogen peroxide
    - Instruct CCF staff to follow the product directions to ensure safety and proper usage.
    - A minimum of five minutes contact time is required for these products.
- Alternatives
    - Use of alternative products must be pre-approved by the CD Unit/EHO
    - Those that have been approved in Canada will have a Drug Identification Number (DIN). Products without a DIN have not been tested for their ability to disinfect against GI pathogens.
    - CCF staff should follow the required safety and use information (see MSDS).
    - The product should also be appropriate for use in a CCF setting and effective against viral agents such as norovirus. Phenol based disinfectant products are not recommended for use in child care settings due to toxicity.

All disinfectants and sanitizers must be properly labeled, stored and used as per manufacturers' recommendation.

APPENDIX 2: Recommendations for cleaning and disinfecting specific types of materials

Sanitizing or disinfection is only effective if the surface is clean first. The surface must be first cleaned of all visible soil and then sanitized or disinfected.

Material	Cleaning	Disinfecting/Sanitizing	Notes
Hard surfaces	Washed with a commercial detergent and water using a disposable towel.	Using one of the recommended disinfectants.	
Food contact/Kitchen (including: surfaces, dishes and utensils)	Washing with hot water and detergent in sink **or** In a dishwasher with a sanitizing cycle.	Using sanitizers containing bleach, iodine or quaternary ammonia and rinsed.	Washed and sanitized according to the requirements set out in the Food Premises Regulations. Any contaminated food that were exposed should be disposed of.
Soft toys	Hot water and detergent in a laundry machine and dried using hot air. **or** Hand clean using detergent and hot water and air dry		Toys that are mouthed should be removed, cleaned and disinfected before being used again.
Hard surface toys	Washed with a commercial detergent and water using a disposable towel. **or** In a dishwasher with a sanitizing cycle.	Using one of the recommended disinfectants and left to air dry.	Should be cleaned and disinfected daily or more often if required. Toys that are mouthed should be removed, cleaned and disinfected before being used again.

Material	Cleaning	Disinfecting/Sanitizing	Notes
Diapering and washroom area	All surfaces (toilet, sinks, counters) including the change table surface should be washed with a commercial detergent and water using a disposable towel. Lining used on the change table must be changed and disposed of between children and surface disinfected between changes	Using one of the recommended disinfectants.	Seats, bowls and flush handles and hand sinks should be cleaned after each use where possible. Particular attention is recommended for cleaning after each episode of diarrhea or vomiting. During diapering, disposable gloves can be used but must be discarded after each change and hands washed. A disposable covering for the change table should be used and discarded after each change.
Floors and carpets	Floors can be washed with a commercial detergent and water using a disposable towel or mop. Carpets should be shampooed or steam cleaned.	Using one of the recommended disinfectants.	
Mop heads	Washed with a commercial detergent and water.	Using one of the recommended disinfectants and left to air dry.	

APPENDIX 3: Cleaning up vomit and diarrhea with appropriate Personal Protective Equipment (PPE) and actions

Spill Kit

PPE

- Disposable gloves (reusable rubber housekeeping gloves may be used but must be cleaned and disinfected after use)
- Gown
- Eye protection
- Standard procedure mask

Cleaning products

- Large plastic bucket
- Mop
- Plastic leakproof bags
- Single use towels
- Detergent for cleaning
- Bleach or other disinfectant for disinfecting

Single use items should be replaced immediately after use so that the items will be available for future use.

Recommended cleaning protocol for CCF staff

1. Use PPE as needed. Depending on the size of the spill, not all PPE may be necessary. **Gloves are essential.**
2. Remove gross soil or spill with disposable towels, starting with the area which is least soiled to the largest spill area, place towels in a leak-proof plastic bag for disposal.
3. Use a single use cloth or mop to clean the area using detergent and water.
4. Disinfect the area with a recommended sanitizer using single use cloths or a clean mop.
5. Allow solution to air dry
6. Clean and disinfect all soiled reusable equipment and supplies (e.g. mop heads, bucket). Discard disposable items in a plastic bag for disposal.
7. Remove PPE and place disposable items in a plastic bag for disposal.
8. Ensure bag with disposed items is sealed. Placed in garbage container outside of the CCF immediately or placed in a garbage container with a lid until it can be disposed of.
9. Wash hands thoroughly using soap and water
10. Restock kit (supplies) as necessary.

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