Outbreak Response Plan

May 2016

NOVA SCOTIA

OUTBREAK RESPONSE PLAN

Section Contents

1. INTRODUCTION

The purpose of the Outbreak Response Plan is to provide direction to the Department of Health and Wellness (DHW) and Nova Scotia Health Authority (NSHA) outbreak teams on how to manage confirmed or suspected outbreaks of diseases of public health importance.

2. OUTBREAK DEFINITIONS

An outbreak is commonly defined as the occurrence in a community or region of cases of an illness with a frequency clearly in excess of normal expectancy. The number of cases indicating presence of an outbreak will vary according to the infectious agent, size and type of population exposed, previous experience or lack of exposure to the disease, and time and place of occurrence. Therefore, the status of an outbreak is relative to the usual frequency of the disease in the same area, among the same population, at the same season of the year[1].

For the purposes of the response plan, please find the following definitions that originate from the Canadian Network for Public Health Intelligence (CNPHI)[2]:

Community Outbreak

Two* or more unrelated cases** with similar illness that can be epidemiologically linked to one another (i.e., associated by time and/or place and/or exposure).

Institutional Outbreak

Three* or more cases with similar illness that can be epidemiologically linked to one another (i.e., associated by exposure, within a 4-day period, in an institutional setting).

* For certain illnesses (e.g., botulism, measles), 1 case of the disease may constitute an outbreak.

** Cases who do not live in a common household, exclusive of an institutional event.

For the case definition of influenza-like illness in an institutional setting refer to the *Guide to Influenza-Like Illness/Influenza Outbreak Control for Long-Term Care Facilities and Adult Residential Centres found here (Click on "Communicable Disease Prevention and Control"):* ***novascotia.ca/dhw/cdpc/info-for-professionals.asp***

3. PRINCIPLES OF OUTBREAK MANAGEMENT

The principles of outbreak management are to:

- Detect and investigate outbreaks of public health importance within a time frame appropriate to the situation† and as a result, limit secondary cases/risks to the public.
- Manage public health outbreaks in accordance with legislation, regulations, standards, and protocols.
- Ensure timely coordination, participation, and communication of appropriate stakeholders.

†The decisions regarding whether and how extensively to investigate a potential outbreak depend on a risk assessment that involves a number of factors.

Some factors for consideration include:

- the severity of the illness,
- the number of cases,
- the source,
- mode or ease of transmission, and
- the availability of prevention and control measures

Public health is more likely to investigate an apparent outbreak when the number of affected (or exposed) persons is large, when the disease is severe (serious illness with high risk of hospitalization, complications, or death), when effective control measures do not exist, and when the outbreak has the potential to affect others unless prompt control measures are taken.

For example, a single case of gastroenteritis is unlikely to prompt a CD investigation, but a cluster of cases may. On the other hand, even a single case of botulism is likely to be investigated immediately to identify and eliminate the source, because it is both potentially fatal and preventable, and the source can usually be identified.

At the jurisdictional or national level, the unusual presentation of disease may spur an investigation. Occurrence of a new or rare disease or a change in the pattern of disease in an area is more likely to prompt an investigation than occurrence of a common disease with well-established transmission patterns and control measures[3].

4. OUTBREAK TEAM

The Outbreak Team works in conjunction with appropriate partners (external and internal) to investigate and manage a suspect or confirmed outbreak. Membership on the outbreak team will vary depending on the infectious agent, the geographical extent and the site and operational requirements to implement public health measures for preventing further transmission[4]. The team may also include external partners as deemed necessary.

Depending on the extent of the outbreak and needs of the investigation, the outbreak team may be initiated at the NSHA, provincial or federal level.

Public Health in the NSHA:

- Leads an outbreak that occurs in a zone in the health authority
- Provides support to institutions (e.g., long-term care, acute care) during an outbreak

The Office of the Chief Medical Officer of Health, DHW leads an outbreak in response to:

- An outbreak of exceptional magnitude or complexity (novel strain or disease)
- An outbreak that involves a multi-departmental provincial government response
- An outbreak that overwhelms the capacity of the NSHA and/or involves more than one zone
- An outbreak which involves provincial, national, or international boundaries
- The direction of the Chief Medical Officer of Health (CMOH), per the Health Protection Act (HPA)

5. ROLES AND RESPONSIBILITIES OF THE OUTBREAK TEAM

Lessons learned from previous outbreaks support an approach that clearly defines the roles and responsibilities of the outbreak team members when managing an outbreak[5,6,7].

Interprofessional collaboration requires communication between professionals, common goal setting, problem-solving skills, and a clear understanding of each member's role on the team. Role clarification among healthcare professionals is uniquely important as roles can overlap and potentially cause conflict. Clarifying each member's role and corresponding responsibilities helps reduce intra-team conflict, mitigate role ambiguity, dissolve professional boundaries, and build trusting relationships[8].

Table 1 outlines the functions and the responsibilities that are required to manage an outbreak in the most efficient and effective manner[9,10,11].

- *The function represents the role associated with outbreak investigation and management; it is not a position title. Pending surge capacity and outbreak magnitude one individual may have multiple functions.*
- *The responsibilities describe the duties associated with the particular function.*
- *Responsibilities can be delegated to another position or person.*
- *The accountability section refers to the position that is liable to ensure that the responsibilities associated with each function are carried out and is further divided into the NSHA and DHW. Regardless of who carries out the delegated responsibilities, liability always rests with the position named as accountable.*

The functions include:

- Outbreak Management
- Investigation Management
- Case Investigation
- Surveillance/Epidemiology
- Information Coordination
- Outbreak Communications
- Resource Management
- Laboratory
- Logistical Management

Table 1: Outbreak Team Function, Responsibilities, and Accountability

Function	Responsibilities	Accountability	
		NSHA	DHW
Outbreak Management	• Confirming and declaring outbreak • Establishing outbreak team with appropriate members and assigning functions • Chairing the outbreak meetings • Arranging advice from experts as necessary (e.g., vaccinologist, infectious disease clinicians) • Ensuring available data is reviewed critically on a regular basis by the investigation team to generate hypotheses and decisions concerning the direction of the investigation • Informing and updating Senior Management of the current status of the investigation • Advocating for appropriate human, logistical, and financial resource requirements • Overseeing public health control measures and specific interventions that are initiated during an outbreak • Ensuring that debriefing and evaluation of outbreak occurs using the guide in Appendix ***A*** and the templates in Appendices ***B*** & ***D*** • Ensuring final outbreak reporting is complete, signed, and submitted to the Deputy Chief Medical Officer of Health for his/her signature once the outbreak is over (see ***Table 2*** and Appendices ***C*** & ***D***) • Determining the need for an outbreak notification via CNPHI • Contacting and/or requesting assistance from the Public Health Agency of Canada, or other Provincial, Federal, or Territorial agencies and authorities as necessary • In the event of a province-wide outbreak, ensuring appropriate Zone outbreak representation on the Outbreak Investigation Coordinating Committee (OICC)	Medical Officer of Health assigned to the Zone where OB is occurring or CMOH /Deputy Chief Medical Officer of Health (DCMOH) if outbreak is beyond one or more Zones.	CMOH

Table 1: Outbreak Team Function, Responsibilities, and Accountability (Continued)

Function	Responsibilities	Accountability	
		NSHA	DHW
Investigation Management	• Leading and coordinating the overall management of the investigation(s) and outbreak response [ensuring ongoing communication with investigators (i.e., Health Inspectors/Public Health Nurses/Epidemiologists) regarding their responsibilities in the outbreak and reporting mechanisms] • Working closely with the individuals responsible for Investigation, Information Coordination, and Surveillance/ Epidemiology to develop or modify an interview tool (questionnaire) and other forms as required, and collating and critically reviewing the information collected during the investigation (epidemiology, inspection reports, public health measures updates) • Ensuring up-to-date investigation summaries are prepared to present to the individual(s) fulfilling the Outbreak Management responsibilities and the Outbreak Team in an attempt to generate hypotheses and make decisions concerning the direction of the investigation and necessary public health controls/measures • Identifying investigation and resource requirements (see ***Appendix E*** for recommended outbreak response kit components) • Considering centralized interviewing • Ensuring control measures are implemented • Training novice investigators as necessary	Medical Officer of Health assigned to the Zone where OB is occurring or CMOH/DCMOH if outbreak is beyond one or more Zones.	CMOH

Table 1: Outbreak Team Function, Responsibilities, and Accountability (Continued)

Function	Responsibilities	Accountability	
		NSHA	DHW
Investigation	• Collecting[‡] outbreak-related information through interviews and by other means • Participating in meetings/discussions related to the outbreak, providing updates as required • Arranging for appropriate identification and follow-up of contacts • Arranging for the provision of prophylactic treatment and immunization for contacts and others at risk as necessary • Conducting inspections and ensuring enforcement actions are undertaken as necessary • Providing education and information to the case(s) and others as needed • Arranging the collection and transport to the lab of appropriate specimens as necessary • Undertaking appropriate food, water, and environmental sampling and taking responsibility for the collection and transport of samples to a suitable laboratory • Liaising with clinicians regarding specific testing and management of cases • Ensuring investigation case findings are documented and provided to the individual(s) fulfilling the Investigation Management responsibilities [‡]*See **Appendix F "Health Protection Act Letter re Obtaining Information**" to be used, if necessary. This letter explains that it is mandatory for Health Professionals, as well as administrators from non-health-care related-agencies, to provide information to the Medical Officer of Health or designated Public Health Nurse/ Public Health Inspector when requested, as legislated in the Health Protection Act (HPA)[12].*	Medical Officer of Health assigned to the Zone where OB is occurring or CMOH/DCMOH if outbreak is beyond one or more Zones.	CMOH

Table 1: Outbreak Team Function, Responsibilities, and Accountability (Continued)

Function	Responsibilities	Accountability	
		NSHA	DHW
Surveillance/ Epidemiology	• Providing support for data management, analysis, and interpretation • Assisting with data collection, and coordinating the development of an information management tool if required • Summarizing the descriptive epidemiology of an outbreak including regular and timely analysis of the data • Analyzing and interpreting the outbreak data to aid in determining necessary interventions • Tracking the status of the outbreak reports (initial, update, and final reports) • Assisting with writing the epidemiological components of the comprehensive final outbreak report • Working closely with the individual(s) fulfilling the Outbreak and Investigation Management responsibilities to coordinate the flow of data and other information (e.g., collecting investigation reports and keeping track of investigation statuses) • Coordinating the administration of user access to Canadian Network for Public Health Intelligence (CNPHI) • Assisting with the drafting and preparation of the Outbreak Summary	Medical Officer of Health assigned to the Zone where OB is occurring or CMOH/DCMOH if outbreak is beyond one or more Zones.	CMOH

Table 1: Outbreak Team Function, Responsibilities, and Accountability (Continued)

Function	Responsibilities	Accountability	
		NSHA	DHW
Information Coordination	• Facilitating the development of information with content experts (e.g., public fact sheets, websites, toolkits, etc.) • Managing the issue log and following up on the Outbreak Team's outstanding actions/issues (the issue log can be found in ***Appendix G***) • Working with Logistic Management, the Information Coordination designate will ° Ensure outbreak team meetings are regularly scheduled ° Be responsible for the integrity of the record of events including minutes of meetings (edit and provide content information, follow up to ensure actions/issues are addressed, etc.) ° Develop and manage the email/ notification list for the outbreak to ensure that outbreak information and resources (e.g., epidemiological reports and summaries) are provided to the outbreak team in a timely manner ° Manage and ensure the information SharePoint ("outbreak folder") is up to date and that appropriate people have access to the information in a timely manner • Coordinating the comprehensive final outbreak report completion and ensuring input from appropriate outbreak team members	Medical Officer of Health assigned to the Zone where OB is occurring or CMOH/DCMOH if outbreak is beyond one or more Zones.	Director of CDPC, DHW

Table 1: Outbreak Team Function, Responsibilities, and Accountability (Continued)

Function	Responsibilities	Accountability	
		NSHA	DHW
Outbreak Management Communications	• Working with individual(s) responsible for Information Coordination in facilitating the development of communication materials, including press releases and background facts • Providing regular updates to media and NSHA/ministerial officials • Arranging and managing press conferences and interviews • Deciding, in consultation with the outbreak team, who the media spokesperson will be and under what circumstances • Acting as liaison with Communication Officers with DHW/NSHA and other departments/agencies/organizations involved in the outbreak	Communications Advisor for NSHA	Communications Advisor to the Outbreak Team
Resource Management	• Ensuring and obtaining the necessary infrastructures and resources available to adequately support investigations, as directed by the individual(s) responsible for Outbreak and Investigation Management. This may include human, monetary, supply, etc. • Signing authority for fiscal	If outbreak is in only one Zone: PH Director If more than one Zone: Senior Director, Public Health	Director CDPC, DHW
Logistical Management	Working with an administrative support designate, the individual(s) fulfilling Logistical Management function will be Designate responsible for: • Organizing and arranging meetings as required • Ensuring that minutes are recorded for all meetings • Storing records of minutes, details of the outbreak, and other information in a secure location • Disseminating information to team members, partners, and others as directed by the individual fulfilling the Information Coordination function	Information Coordination Designate	Director Health Services Emergency Management (HSEM), DHW

Table 1: Outbreak Team Function, Responsibilities, and Accountability (Continued)

Function	Responsibilities	Accountability	
		NSHA	DHW
Laboratory	• Completing laboratory testing (in consultation and discussion with the physician, MOH, and NSHA/anchor labs) • Notifying immediately by telephone (with follow-up in writing), all positive lab results related to the outbreak • Reporting negative lab results related to the outbreak • Making early decisions regarding saving of specimens and/or isolates, in consultation with the Outbreak Team, the Provincial Public Health Laboratory Network (PPHLN), and the regional labs • Working with investigators to link cases to the outbreak • Acting as a consultant to review case findings and recommend and/or suggest further testing • Acting as a liaison with other laboratories involved with testing (e.g., CFIA, regional labs, anchor labs) • Providing input into testing recommendations • PPHLN leads the coordination of outbreak-related results (negative/positive) with PHAS, DHW as required • PPHLN leads the coordination of surveillance-related testing that is shared with PHAS DHW (i.e., PulseNet typing, influenza subtyping) as required	Director, Zonal NSHA Lab	Director, PPHLN

6. COMPONENTS OF OUTBREAK INVESTIGATION AND MANAGEMENT

The following are key components of outbreak investigation and management[13:]

a. Establish the existence of an outbreak and assign an outbreak number, develop a case definition, and notify the public health system
b. Establish an outbreak team and assign functions
c. Develop an interview tool and collect information/data
d. Implement control measures based on findings
e. Analyze information and continue surveillance for new cases
f. Communicate regularly to stakeholders and the public health system
g. Document the outbreak and complete reports
h. Determine when the outbreak is over and evaluate the outbreak control and management

a. Establish existence of an outbreak and assign outbreak number, develop a case definition, and notify the public health system

- Upon receipt of report, confirm the existence of an outbreak. A case definition can be developed on the basis of preliminary information using objective clinical criteria such as fever, blood in the stool, skin rash, and restrictions as to time, place, and person. This may include laboratory confirmation. As the outbreak evolves, and more specific data are obtained the case definition may change[13.]
- Notify surveillance team within the PHAS Division, DHW (delegate of the CMOH), using CNPHI or other electronic applications as available, within one business day of receiving notification of an outbreak or determining that an outbreak is occurring (refer to Public Health Alerts section of the *NS Surveillance Guidelines for Notifiable Diseases and Conditions:* ***novascotia.ca/dhw/populationhealth/documents/Public-health-alerts-quick-reference-for-postings.pdf***).

  Note: Post a public health alert if there is not enough information to confirm the existence of an outbreak yet there is a need to enhance stakeholder capacity to anticipate, detect, respond, prevent and control health risks associated with communicable disease events. Refer to Public Health Alerts section of the NS Surveillance Guidelines for Notifiable Diseases and Conditions for more information: ***novascotia.ca/dhw/populationhealth/documents/Public-health-alerts-quick-reference-for-postings.pdf***.

- Assign an outbreak number. The format for outbreak numbering consists of a 4-digit year, followed by the 2-digit Zone number, and a 3-digit sequential number. Note: The provincial outbreak "Zone" number is 00.

2009 -	**04**	**- 013**
Outbreak year	Zone	Sequential number assigned by Zone

b. Establish an outbreak team and assign functions

- See sections 4 and 5 regarding establishing an outbreak team and assigning functions and responsibilities.
- The function assignment table can be found in ***Appendix H***.

c. Develop an interview tool and collect information/data

- Develop or modify an interview tool (questionnaire) and other forms as required and review with the investigators (refer to ***Table 1*** above for more information about the function of Investigation Management and Investigation).
- See Surveillance Guidelines for appropriate forms that must be completed. ***novascotia.ca/dhw/populationhealth/surveillanceguidelines/Surveillance_Forms.pdf***

Information collected will focus on person, time, and place.

Person

- personal characteristics (date of birth, sex, immune status, marital status, medical conditions, occupation, cultural norms, activities, predisposing or protecting factors)
- symptom inquiry: type of symptoms
- classification as case or contact when appropriate

Time

- time period over which people became ill
- onset of symptoms
- duration of symptoms
- time between exposure to potential source (if known) and onset of symptoms

Place

- common social event, such as a wedding, reception, anniversary, party, sports event; common places visited (mall, school, beach, etc.); or other
- travel

- possible exposures (e.g., menus, common food item, pool)
- contact with animals, pets, vectors, as appropriate

If a common event is identified, and the source is thought to be food borne, determine what food was served, obtain a guest list and menu, and identify where the food was purchased. Identify common food ingested and any other food that was served that might not be on the menu. Contact the Department of Environment to arrange for inspection of food establishments and collection of food samples where applicable.

If a common event is identified, and the source is thought to be recreational water (e.g., pool, whirlpool, lake), contact the Department of Environment to arrange for inspection of the site where applicable.

Information sources may include:

- interviews with cases, relatives, and contacts
- environmental public health inspection (facility/site) reports
- literature review
- consultation with experts
- lab testing
- interview with primary care physicians, clinics, health-care facility staff
- review of events and sales records (reservation lists, invitation lists, credit card bills)
- interviews with people from agencies involved (school, day-care centre, restaurant, work places, public places)

d. Implement control measures based on findings

Depending on the outbreak situation, control measures might be initiated at various stages of the outbreak. Determine interventions and treatment such as the following:

- necessity of contact tracing
- preventative measures–immunization, exclusion, prophylaxis, treatment (of case to prevent transmission)
- removal of agents/exposure
- addressing the source of the outbreak
- closure of premises if required
- modification of procedures (e.g., swimming pool filtration)
- cleaning or disinfection of contaminated equipment or fittings (medical devices, cooling towers, food preparation equipment, etc.)

Refer to other relevant outbreak management guidelines or related documents, such as the following:

- *Guidelines for the Prevention and Control of Measles Outbreaks in Canada:* ***phac-aspc.gc.ca/publicat/ccdr-rmtc/13vol39/acs-dcc-3/index-eng.php***
- *Guidelines for the Prevention and Control of Mumps Outbreaks in Canada:* ***phac-aspc.gc.ca/publicat/ccdr-rmtc/10vol36/36s1***
- Canada's *Food-borne Illness Outbreak Response Protocol (FIORP) (2010)* ***phac-aspc.gc.ca/zoono/fiorp-pritioa/index-eng.php***
- *Procedures to Investigate Foodborne Illness, 5th edition, International Association for Food Protection (IAFP) Available for purchase from* ***foodprotection.org/publications/other-publications***
- *Guide to the prevention and control of respiratory illness /ILI for Long-Term Care Facilities and Adult Residential Centres* ***novascotia.ca/dhw/CDPC/info-for-professionals.asp***
- *Canadian Pandemic Influenza Plan for the Health Sector:* ***phac-aspc.gc.ca/cpip-pclcpi/index-eng.php***

e. Analyze information and continue surveillance for new cases

- Review the case definition and update as necessary.
- Determine attack rates and epidemic curve.
- Formulate a tentative hypothesis regarding source and transmission.
- Determine who is at risk.
- Initiate geographic information system (GIS) tracking if available.
- Update data collection tools as required.
- Continual assessment and evaluation of the most current information and existing control measures.
- Active surveillance for new cases (case finding).
- Consider further studies or special investigations if warranted to gain insight into the source, transmission, or more effective control measures.
- Re-evaluate most current information and outbreak control measures on a continual basis.

f. Communicate regularly:

TO STAKEHOLDERS INCLUDING THE PUBLIC:

- Consider target groups (public, people at risk, health-care providers, media).
- Consider key messages and methods to disseminate (fact sheets, web postings, press releases, letters, Twitter, etc.).

- Consider whether a toll-free telephone information line is necessary.
- Within NSHA: Consider notifying others who may not be included on the CNPHI reporting application (e.g., Senior Public Health Director or Zonal PH Director, VP Population Health & Public Health, and NSHA communications).
- Within DHW: Consider notifying the Deputy Minister, Minister and Communications.

TO THE PUBLIC HEALTH SYSTEM:

Public Health Alerts and Outbreak Summaries

- It is expected that communication be provided in a timely manner to the Public Health System using the CNPHI application. See the Nova Scotia Surveillance Guidelines for Notifiable Diseases and Conditions, Public Health Alerts section (***novascotia.ca/dhw/populationhealth/documents/Public-health-alerts-quick-reference-for-postings.pdf***), for more information regarding this requirement.

g. Document the outbreak and complete reports

- It is required that all outbreak-related activities are documented and the records stored in a secure location. For example, log the following:
  - all minutes of outbreak-related team meetings and conference calls
  - all notifications, alerts, and correspondence
  - all pertinent dates such as date outbreak declared and date outbreak declared over
- The "Outbreak Summaries" function is used for outbreak reporting through CNPHI at ***cnphi-rcrsp.ca*** (log on and go to Outbreak Summaries and refer to NS Surveillance Guidelines for more information: ***novascotia.ca/dhw/populationhealth/surveillanceguidelines/public_health_alerts.pdf***).
- It is required that the organization leading the outbreak (i.e., NSHA or DHW):
  - Complete and submit outbreak reports via CNPHI.
  - Complete the CNPHI outbreak final report within 48 hours after the outbreak is declared over.
- **Individual enteric and respiratory outbreaks within agencies such as long-term care facilities will require the final outbreak report via the CNPHI tool, unless otherwise indicated.**
- **More complex outbreaks will require a comprehensive final outbreak report as outlined in *Appendix C*. See *Table 2, "Reports Required for Outbreaks"*.**
- The CMOH and/or DCMOH reserves the right to request an Interim Outbreak Report at any time. The DCMOH will ensure that final reports are completed and may request further review and debriefing of outbreaks at any time.
- The Outbreak Management designate ensures the completion of the

Comprehensive Final Outbreak Report, approves the final document, obtains appropriate signatures, and submits to the DCMOH within 30 days following the declaration that the outbreak is over.

- The DCMOH ensures that the Comprehensive Final Outbreak Report is forwarded to the appropriate Divisional Director(s) or other government department to ensure follow-up of recommendations as required.
- Divisional Director(s) will provide a written summary of the actions taken as a result of the recommendations which will be provided to the DCMOH and also filed with the Final Outbreak Report.
- For ongoing outbreaks over 30 days, an interim report is required. The "Comprehensive Final Outbreak Report Template" provided in ***Appendix D*** can be used for interim reporting.

Table 2: Reports Required for Outbreaks

	Initial Outbreak Report Summary (via CNPHI)	**Update Report Summary** (via CNPHI)	**Final Report Summary** (via CNPHI)	**Final Comprehensive Outbreak Report Outline** (MS Word Doc, see ***Appendix C***)
Viral gastroenteritis in institution(s)	YES	Only if requested	YES	Only if requested
Viral Respiratory (e.g., RSV, influenza) in institution(s)*	YES	Only if requested	YES	Only if requested
All other outbreaks	YES	YES	YES	YES

*Institutions may include LTCFs, correctional facilities, residential care facilities, and acute care facilities.

h. Determine when the outbreak is over and evaluate the outbreak control and management

- The Outbreak Team will determine when the outbreak is over and will communicate appropriately. Often an outbreak is declared over after 2 incubation periods have passed without any new cases presenting, however, for diseases with long incubation periods other rationale may be used. During this time, long-term prevention and control measures will be established and implemented.
- The "Outbreak Evaluation Guide" [***Appendix A***] is a tool to use to evaluate the effectiveness of the outbreak management response. The "Evaluation Template for use in Evaluating Outbreak Materials" found in ***Appendix B*** can be used to evaluate materials used during the outbreak. It can be modified to meet the needs of the specific material under evaluation (e.g., pamphlet, general information document, tool kit).

7. APPENDICES

Appendix A: Outbreak Evaluation Guide

EVALUATION GUIDE for OUTBREAK MANAGEMENT Outbreak Management		
Effectiveness of the outbreak management structure		
Evaluation Questions	**Indicator**	**Method**
Was the Outbreak Management Team efficient and effective? • What worked well? • What could have been improved?	• Timely establishment of the Outbreak Team • Appropriate composition of the Outbreak Team • Clearly defined & understood functions and responsibilities for the Outbreak Team • Engagement of Outbreak Team members • Ability of the Outbreak Team to engage appropriate stakeholders (DHW, NSHA Public Health, QEII Provincial Lab, NS Agriculture, NS Environment, etc.) in the response? • Perceived strengths/challenges of the Outbreak Team in responding to the outbreak	Interview Document Review
Was there a coordinated response to the outbreak? • What worked well? • What were the challenges?	• Established guidelines/documented procedures to coordinate the efficient flow of information • Timely flow of information (re: resource needs) between the NSHA and Outbreak Team and DHW • Established procedures to avoid duplication (e.g., double entry of the data by Public Health NSHA & DHW) • Development of strategies to address inefficient procedures • Adequate (human, financial & other) resources available and accessible to attend to the outbreak • Perceived strengths/challenges in the coordination across the system	Interview Document Review
Clinical Services		
Evaluation Questions	**Indicator**	**Method**
Were the clinical services responsive to the outbreak?	• Physician use of the clinical case definition when requesting laboratory tests? (i.e., confirming the diagnosis) • Development of an acceptable (accurate) treatment algorithm if applicable • A reliable case definition established within an acceptable time frame • Accurate diagnosis of cases by physician • Timely processing of laboratory specimens • Perceived strengths/challenges in establishing a case definition and processing of laboratory specimens	Interview Document Review Interview Document Review

EVALUATION GUIDE for OUTBREAK MANAGEMENT Surveillance What were the strengths/challenges of the surveillance function (i.e., the collection, analysis, and dissemination of the disease outbreak)?		
Evaluation Questions	**Indicator**	**Method**
Was the data collection process accurate, timely and efficient?	• Timely reporting of positive lab results to DHW & PHS (immediately by phone and follow up in writing to ordering physician, PHS and DHW) • Physician case reporting met provincial guidelines for reporting (re: timeliness & accuracy) • Established procedures and tools for reporting positive lab results and related information (e.g., patient contact information) • Established procedures/mechanisms to avoid data entry errors or duplication • Adequacy of the available human and technical resources to efficiently perform the data analysis • Timeliness of the data analysis process • Perceptions of strengths/challenges in case reporting (What worked well? What could improve? e.g., receiving data from Zone/Lab in timely manner; accuracy of data from Zone/Lab; barriers/breakdown in the data collection process)	Interview Document Review
Was the data collection process timely and efficient?	• Perceptions of the timeliness of the data analysis • Perceptions of what worked well in the process of data analysis • Perceptions of what could have been improved	Interview Document Review
Was the data analysis process timely and efficient? What were the challenges? How could this have been improved?	Ability of the outbreak team leader to report on the outbreak (number of cases, location, etc.) in a timely manner • Timeliness of the epi-curve • Use of the epi-curve (how, by whom?) • Formulation of tentative hypothesis (how? by whom? timeliness) • Timeliness of establishing/verifying the existence of an outbreak	Interview Document Review
Was data analysis used to inform and update the case definition and inform application of community public health measures?	• Ability of analysis to provide field interview and investigation staff to better focus work • Was the analysis useful in validating the infective agent, mode of transmission, effectiveness of intervention or prevention methodology?	Interview Document Review

EVALUATION GUIDE for OUTBREAK MANAGEMENT Public Health Measures		
Evaluation Questions	**Indicator**	**Method**
Case Management • What case management activities were used? • Did case management occur for all patients?	• Establishment and adherence to process for case management (e.g., education of all patients to prevent transmission)	Interview Document Review
Contact Tracing • Did contact tracing occur for all cases?	• Established process for contact tracing • Contact tracing process successfully identified those at high risk of transmitting the disease • Perceived contribution of contact tracing to the management of the outbreak (prevention and control measures) • Perceived strengths/challenges with the contact tracing process	Interview Document Review
Community Measures • What community measures were implemented? • Challenges in implementing community measures?	• Description of community measures implemented and their target group • If employed, were immunization strategies delivered in a timely manner if necessary? • Were community interventions undertaken (facility closure or sanitizing, food seizure, food destruction, water disinfection, etc.) • If vaccines and/or immunization were employed, were the NACI standards for cold chain storage adhered to throughout the outbreak? What were the barriers?	Interview Document Review

EVALUATION GUIDE for OUTBREAK MANAGEMENT Communications		
Evaluation Questions	**Indicator**	**Method**
Effectiveness of Communication Strategies (1-800 line; letter to physicians; physician video; posters; DHA or DHW website)	• Communication strategies reached their target audiences • Messages of communication strategies were clear to the intended audience • Target audience acted upon the communication messages • Stakeholders consulted in the development of communication strategies • Communication materials were culturally sensitive • Reduction in the number of calls to NSHA Public Health if a 1-800 line was established	Interview Document Review

EVALUATION GUIDE for OUTBREAK MANAGEMENT		
Communications		
Evaluation Questions	**Indicator**	**Method**
Was the process for communicating the onset of an outbreak (provincially/regionally/nationally) efficient?	• Documented process for communicating the onset of an outbreak (provincially/regionally/nationally) • Clear and timely communication to stakeholders of the process • Perceptions of gaps • Suggestions of how the process could be improved in the future	Interview Document Review
Were the **resources** developed for dissemination of information (i.e., fact sheets, FAQ's) effective in increasing the public's awareness of the outbreak?	• Increased awareness among public of the outbreak	Interview Document Review
Lessons learned re: communicating with the media	• Perceptions of approaches that worked well in communicating with the media • Recommendations for communicating with the media in future outbreaks	Interview Document Review
Did **communication with stakeholders** address their needs for information on the outbreak?	• Stakeholder satisfaction with information on the outbreak	Interview Document Review
Functions and responsibilities in communicating the outbreak?	• Were the functions and responsibilities clearly defined, and appropriate people involved in communicating the outbreak?	

The following questionnaire can be used as a template to evaluate the outbreak resources. The tool is a template only and modifications can be made based on the type of resource being evaluated.

Introduction to the Questionnaire

The purpose of this questionnaire is to ask for your input on the [INSERT DOCUMENT TITLE] produced by [INSERT NAME OF AGENCY/DEPARTMENT WHO DEVELOPED THE RESOURCE].

Your facility has been selected to provide feedback on the [INSERT DOCUMENT TITLE] because [INSERT REASON]. This survey should be completed by [INSERT POSITION TITLES] who may have been involved in outbreak management. Staff may fill out this survey individually or collectively. If staff fill out the survey collectively, please indicate this in the box at the bottom of this page.

Specifically, we are seeking your feedback on:

- Ease of use
- Clarity of information
- Relevance

Your input will be helpful as we seek to improve the [INSERT DOCUMENT TITLE].

Please use your copy of the [INSERT DOCUMENT TITLE] as a reference to help you complete this survey. Filling out this survey will take approximately 15-20 minutes, but it may take longer if you have not used the document recently and need to take more time to review it.

Please complete and return this survey by [INSERT DATE]

If you have any questions about any part of this feedback process, please contact [INSERT NAME AND CONTACT INFO].

Your feedback will only be seen by the Evaluation team conducting this work, and will not be seen by anyone associated with your facility. All respondents' feedback will be combined and any identifying information removed to create a final report of the results.

Thank you for taking the time to provide feedback on the document.

Your responses are important in helping us to make this resource as helpful as possible to you.

If this survey was filled out collectively by a number of facility staff,
please indicate here: ☐

1. How did you receive the [document]?

☐ Mail

☐ E-mail

☐ Public Health staff

☐ Other (please describe): _____

_____

2. Did Public Health (PH) staff review the document with you? If not, would this have been helpful?

_____

_____

_____

_____

_____

3. Are you aware of how to contact Public Health Services if there is an outbreak in your facility?

☐ Yes

☐ No

4. Please describe the materials and/or resources you used to determine your course of action during the recent outbreak in your facility:

☐ [INSERT DOCUMENT TITLE]

☐ Website

Please specify: _____

☐ Colleague

☐ Other print or electronic material

Please specify _____

5. Is there any information you require about managing outbreaks in your facility that is not addressed in the document? If so, what information would make the document more useful?

6. Is there any unnecessary information in the document? If so, in what section/ page number of the document is this information located?

7. Was there any conflicting information in the document? If so, what was the conflicting information? (please reference page numbers of conflicting information in the document if possible).

8. Is there any more information or feedback you would like to share to help us improve the document?

MODIFY THE FOLLOWING CHART AS NECESSARY FOR THE RESOURCE

PLEASE HAVE THE [INSERT DOCUMENT TITLE] IN FRONT OF YOU AS YOU COMPLETE THE FOLLOWING TABLE. USING A SCALE OF 1-5 (WITH 1 BEING THE LOWEST SCORE), PLEASE RATE EACH OF THE FOLLOWING SECTIONS OF THE DOCUMENT IN TERMS OF:

Section	Ease of locating the required information	Clarity of the procedure/ process to follow	Clarity of language/ terminology	Usefulness of the information	Comments/ Suggestions for improvement
SECTION 1					
SECTION 2					
SECTION 3					
SECTION 4					
SECTION 5					
SECTION 6					
APPENDIX A					
APPENDIX B					
APPENDIX C					
APPENDIX D					
APPENDIX E					
APPENDIX F					
APPENDIX G					
APPENDIX H					

If possible, we would like to follow up with you regarding your feedback on the document by phone. This is because sometimes it is possible to get more in-depth responses by talking to people one-on-one. This will give you the opportunity to elaborate on any of your answers to the questionnaire, and to share with us more information about your experiences with using the document. The telephone follow-up will take approximately 15-20 minutes.

If you would be willing to participate in the telephone follow-up, please fill out the section below and return it along with the survey in the self-addressed stamped envelope provided. This information will only be used to contact you and will not be used in our analysis of the questionnaire responses.

Name: _____

Phone number: _____

Best reached at (please provide optimal day/time): _____

Please return in the self-addressed stamped envelope to:

[INSERT CONTACT INFORMATION}

Appendix C: Comprehensive Final Outbreak Report Outline

I Executive Summary

II. Introduction and Background

III. Methods

a] Epidemiological methods

b] Public Health measures

c] Laboratory analysis

IV. Results

a] Epidemiological results

b] Environmental public health results

c] Laboratory results

V. Discussion

VI. Conclusions

VII. Evaluation/Recommendations (See *Appendix G*)

VIII. Acknowledgements

IX. Appendices

X. Signature Block

Explanation

I. Executive Summary

Include the key features of the outbreak, addressing the "who, what, where, and when" of the outbreak. A high level description of the outbreak or the causal hypothesis based on the evidence should be included. Identify lessons learned, recommendations, interventions (could be ongoing), or areas that need further attention. Include important points in the report and be prepared to answer any questions with detail.

II. Introduction and Background

Describe the specific events that led to the investigation, including how the outbreak was first reported, steps taken to confirm the outbreak (including surveillance trends), and who assisted in the investigation. Identify the members

of the outbreak team and objectives of the investigation. Background information identifies the population demographics, previous, similar outbreaks, describing the area, site or facility involved.

III. Methods

Outline the steps taken to investigate the outbreak.

Epidemiological methods: Explain how cases are defined and ascertained. Outline the analytical study methodology and include interview tools and techniques used for investigation.

Public Health measures: Outline the number and types of public health measures that occurred and who conducted these investigations. This would include case management (inspection reports, site visits, etc.), contact tracing, community measures (immunization strategy, facility closure and/or sanitizing), etc.

Laboratory analysis: Describe the number and types of specimens submitted for analysis.

IV. Results

Describe what was discovered.

Epidemiological results: Highlight the number of cases, personal details, and clinical features, including geographical distribution, epidemic curve, risk factor analysis, and attack rates.

Environmental public health results: Describe the results of inspections, risk assessments, and trace back.

Laboratory results: Summarize the results of human and food or source testing.

V. Discussion

This section brings together all aspects of the outbreak. Discussion will include the main hypotheses and justification of conclusions and actions being based on evidence or balance of probabilities. Actions taken to protect public health are described. As well, highlight the problems encountered during the investigation including the lessons learned during the outbreak, including those identified in the debriefing(s).

VI. Conclusion

Give a brief summary of the outbreak.

VII. Evaluation/Recommendations

Describe what should have been done to control the outbreak, prevent future outbreaks, and improve management of outbreaks in the future. The purpose of this section is to educate, so specificity is important. Recommendations for any changes to the Outbreak Response Plan should be included.

VIII. Acknowledgements

This is an opportunity to thank those who assisted with the outbreak.

IX. Appendices

These may include a chronology of events, Outbreak Team membership, terms of reference for the team, maps and references, questionnaires, letters to health-care professionals, media releases, and fact sheets.

X. Signature Block

This report requires sign-off by the Outbreak Management Designate, NSHA MOH and the CMOH/DCMOH.

See “Comprehensive Final Outbreak Report Template” in ***Appendix D***.

Appendix D: Comprehensive Final Outbreak Report Template

Click ***here*** to download a fillable Word template of Appendix D

COMPREHENSIVE FINAL OUTBREAK REPORT

Template

Outbreak #:	- -
Outbreak Start & End (yyyy/mm/dd):	Start: / / End: / /
Location of Outbreak (Name of Facility/Address):	
Type of Outbreak:	☐ Enteric ☐ Respiratory ☐ Other:
Comprehensive Final Outbreak Report Submitted (yyyy/mm/dd):	/ /

Executive Summary

Summary Description of the Outbreak (include causal hypothesis based on the evidence):

Lessons Learned:

Recommendations:

Interventions (complete & on-going) or areas that need further attention:

Introduction & Background

Describe the specific events that led to the investigation. (Including how the outbreak was first reported and steps taken to confirm the outbreak (including surveillance trends)):

Background Information (Identified population demographics, previous and/or similar outbreaks, description of the area, site or facility involved):
Objectives of the Investigation:
Outbreak Team Members:

Methods
Epidemiological Methods (Explain how cases are defined and ascertained. Outline the analytical study methodology and include interview tools and techniques used for investigation)**:**
Public Health Measures (Outline the number and types of public health measures that occurred and who conducted these investigations. This would include case management (inspection reports, site visits, etc.), contact tracing, community measures (immunization strategy, facility closure and/or sanitizing), etc.):
Laboratory Analysis (Describe the number and types of specimens submitted for analysis.):

Results
Summary (High-level description of what was discovered):
Epidemiological Results (Highlight the number of cases, personal details, and clinical features, including geographical distribution, epidemic curve, factor analysis, and attack rates.):
Environmental Public Health Results (Describe the results of inspections, risk assessments and trace back.):

Laboratory Results (Summarize the results of human and food or source testing.):

Discussion

Include:

a. Main hypotheses and justification of conclusions.

b. Actions being based on evidence or balance of probabilities.

c. Describe actions taken to protect public health.

d. Highlight the problems encountered during the investigation including the lessons learned during the outbreak & in the debriefing(s).

Conclusion

Brief summary of the outbreak:

Evaluation/Recommendations

Include:

a. Description of what should have been done to control the outbreak, prevent future outbreaks, and improve management of outbreaks in the future (Note: specificity is important).

b. Recommendations for any changes to the Outbreak Response Plan.

Acknowledgements

Appendices

Appendix A:

Appendix B:

Appendix C:

Appendix D:

Appendix E:

Appendix F:

Appendix G:

Appendix H:

Signature Block

This report requires sign-off by the Outbreak Management Designate, NSHA MOH & CMOH/DCMOH.

	Signature	Date
Outbreak Management Designate		
NSHA MOH (If Applicable)		
Chief/Deputy Chief MOH		

Appendix E: Recommended Outbreak Response Kit Components

Note:

- *Since outbreak kits are not necessarily used on a regular basis, ensure components are updated as needed.*
- *Outbreak Response Kits should not be stored in vehicles, as specimen containers may not be effective if exposed to extreme temperatures.*

Outbreak Response Kit Components:

- specimen containers (check expiry dates), such as:
    - Carey-Blair/enteric pathogen transport media–culture and sensitivity
    - SAF fixative–ova and parasites
    - Sterile container for virology including stools
    - Viral transport swab collection kits
- resealable plastic bags with pockets
- laboratory requisitions
- stamps with MOH name and address; ink pad
- outbreak stickers–bright coloured
- note paper and sticky notes
- pens and highlighters
- case management forms
- Nova Scotia Illness Outbreak Reporting Form as necessary
- instruction for specimen collection and labeling
- elastic bands
- brown paper bags
- gloves
- hand sanitizer
- current list of contact names and phone numbers (MOH, Department of Health and Wellness CDPC Division and Population Health Assessment and Surveillance Division (PHAS), Provincial Public Health Laboratory Network contacts, microbiologists, Canadian Food Inspection Agency (CFIA), Department of Agriculture, Department of Environment, and appropriate NSHA staff)

Appendix F: *Health Protection Act* Letter re: Obtaining Information

REQUEST FOR HEALTH INFORMATION, *HEALTH PROTECTION ACT*

Please be advised that I, _____ am a Public Health Nurse/Public Health Inspector and I am working under the authorities designated to me by the *Health Protection Act* (HPA), as directed by the Medical Officer of Health. As such, I work under the direction of the Medical Officer of Health.

Please be further advised that the HPA makes it mandatory for Health Professionals, as well as administrators from non-health care-related agencies, to provide information to the Medical Officer of Health or designated Public Health Nurse/Public Health Inspector when requested. As per HPA[1]:

Section 15 (1) A medical officer may access or order data or records from all possible sources of information, including municipalities, Canadian Blood Services and other government departments, for the purpose of carrying out the duties of the medical officer under this Act and the regulations.

Section 16 (1) For the purpose of clause 71(5)(d) of the Hospitals Act, a medical officer is authorized to access such hospital records as the medical officer reasonably believes are necessary for the fulfilment of the medical officer's duties.

Section 16 (2) Any hospital shall, upon request from a medical officer, immediately make full disclosure to the medical officer of all information, records, particulars and documents of whatever description, including x-rays, photographs and laboratory or blood samples, that relate in any way to any matter about which the medical officer has inquired. 2004, c. 4, s. 16.

Please be further advised that a request made by the Medical Officer of Health or designated Public Health Nurse/Public Health Inspector under the HPA supersedes privacy legislation and may not be refused due to privacy concerns.

Exception from freedom of information legislation S 107- Sections 15, 16, 31, 40, 42 and 50, clause 58(1)(e), clauses 74(1)(p), (s), (t) and (y) and Section 104 apply notwithstanding the Freedom of Information and Protection of Privacy Act. 2004, c. 4, s. 107.

I therefore am advising you that I am seeking information about a client or clients currently being treated at your institution for the purposes of conducting a Communicable Disease Investigation under the *Health Protection Act*.

Please expect contact from me with the next _____ by:

Telephone ☐ E-mail ☐ Fax ☐ Letter ☐

I will provide specifics when I contact you to seek the information required.

Sincerely,

_____

[Public Health Nurse/Public Health Inspector signature and contact information]

cc: MOH for the NSHA Zone involved.

1. *Health Protection Act*, Ch .4 Regulations Part III Sec 107 (2004)

Appendix G: Outbreak Team Issue Log

OUTBREAK TEAM ISSUE LOG						
ORIGINATOR	DESCRIPTION	DATES			LEAD	COMMENT/DECISION
		IDENTIFIED	CRITICAL	RESOLVED		

Appendix H: Function Assignment Table

Date _____

Outbreak Name_____

Outbreak Number_____

FUNCTION DESCRIPTION	INDIVIDUAL(S) RESPONSIBLE	INDIVIDUAL ACCOUNTABLE	COMMENTS
OUTBREAK MANAGEMENT			
INVESTIGATION MANAGEMENT			
CASE INVESTIGATION			
SURVEILLANCE/ EPIDEMIOLOGY			
INFORMATION COORDINATION			
OUTBREAK COMMUNICATIONS			
RESOURCE MANAGEMENT			
LABORATORY			
LOGISTICAL MANAGEMENT			

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