

Ontario's Foodborne Illness Outbreak Response Protocol (ON-FIORP), 2023

Ontario's guide to a multi-partner response to foodborne hazard and illness outbreak investigation

Ministry of Health

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Preamble

The investigation of and response to multi-jurisdictional foodborne hazards or illness outbreaks in Ontario involves multiple levels of government with complementary responsibilities. To enhance the collaboration and overall effectiveness of government response during multi-jurisdictional foodborne hazards or illness outbreak investigations, government Partners (as defined under definitions) collectively developed the *Ontario Foodborne Illness Outbreak Response Protocol* (ON-FIORP).

The ON-FIORP adopts many of the principles and core concepts presented in Canada's *Foodborne Illness Outbreak Response Protocol* (FIORP) and follows the same structure as [Canada's FIORP](#).¹ The ON-FIORP contains duplication of certain information to underscore its importance and to allow certain sections to be used as stand-alone references.

The ON-FIORP is a voluntary arrangement to help enhance public health through effective and efficient response to foodborne hazards or illness outbreaks in Ontario. Partners understand and acknowledge that the ON-FIORP has no legal force or effect, and that notwithstanding the definitions below, the terminology used herein shall generally be construed by its informal, colloquial meaning.

Nothing in the ON-FIORP shall be interpreted or construed to fetter or otherwise interfere with the ability of any Partner to exercise any of its rights and powers to carry out its legislated mandate or bind or limit its operations. It is recognized and agreed upon that neither Canada nor the Province of Ontario by reason of having entered into the ON-FIORP has surrendered, abandoned, or delegated to another Partner any of its powers, rights, privileges, or authorities vested in it under the provisions of the *Constitution Acts 1867 and 1982*, and any amendments thereto or otherwise, or to have impaired any of those powers, rights, privileges, or authorities.

1. Definitions

The following definitions are provided to ensure a common understanding of the terms in this document:

Arrangement: An agreement or understanding between two or more Partners.

Board of Health: Boards of health have responsibility for the delivery of local public health programs and services in Ontario. This responsibility is carried out in collaboration with

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other organizations in the health system and in partnership with others in local communities. The locus of responsibility and accountability of program delivery for boards of health is local. A board of health is established or continued under the *Health Protection and Promotion Act*.

Centralized Integrated Analysis: A centralized collation and analysis of information, used to draw conclusions and inform decision-making based on all available information.

Class I Food Recall: A situation in which there is a reasonable probability that the consumption/exposure to a food will lead to adverse health consequences, which are serious or life-threatening, or the probability of a foodborne outbreak situation is considered high.

Class II Food Recall: A situation where there is a reasonable probability that the consumption/exposure to a food will lead to temporary or non-life-threatening health consequences, or that the probability of serious adverse consequences is considered remote.

Cluster: An unusual aggregation of similar health events, generally grouped together as they appear over a particular time period and/or geographical area. A cluster may be seen as the occurrence of cases of disease (human illnesses) in excess of what is usually expected for a given period of time. A cluster may or may not reach the status of an "outbreak." The use of the term is particularly common in describing the results of subtyping-based surveillance, which may detect a cluster of infections caused by a similar microbial strain.

Confidential third-party information: Information that is not personal information and is in written, electronic, verbal or other form, relating to a third party or a Partner that disclosed it, that is of a confidential nature, and which is provided in confidence by the disclosing third party or Partner in connection with this protocol. It includes but is not limited to trade secrets, scientific, financial, technical or commercial information provided in confidence by a third party to another Partner and treated consistently in a confidential manner by that Partner.

Emergency Operations Centre (EOC): The physical location where an organization comes together during an emergency or significant event to coordinate response and recovery actions, and resources.

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Enhanced Surveillance Directive (ESD): Public Health Ontario (PHO) issues ESDs to boards of health for diseases of public health significance to assist with the provincial investigation of urgent situations and/or outbreaks and to obtain data required for timely investigation. When an ESD is issued, the requested data become priority for reporting and entry into the integrated Public Health Information System (iPHIS), as outlined in the Ontario Ministry of Health [Infectious Diseases Protocol, 2018](#) (or as current).²

Enteric illness: A disease of the gastrointestinal tract caused by an infection or intoxication resulting from the ingestion of a hazardous agent, or toxins transmitted through food, water, animals, or person-to-person contact.

Epidemiological evidence: Data that assess the associations between exposures and human illness or summarizes the incidence in a specific population (e.g.: age group), place, or timeframe.

Epidemiological investigation: An investigation to determine the existence, extent and magnitude, and/or cause of an outbreak. The purpose of the epidemiological investigation is to characterize cases with respect to person, place, and time, and to develop and test hypotheses that explain the specific exposure that caused disease. The investigation may result in recommendations for appropriate prevention and mitigation measures.

Evidence: Information collected and used to assess and demonstrate an association between events. Evidence of an association between a consumed food and human illness may be epidemiological and/or based on the results of food safety investigations and/or laboratory analysis.

Food: Includes any article manufactured, sold, or represented for use as food or drink for human beings, chewing gum, and any ingredient that may be mixed with food for any purpose whatsoever. For the purposes of the ON-FIORP, "food" includes drinking water.

Foodborne hazard: A biological, chemical, or physical agent in, or condition of, food with the potential to cause an adverse health effect to the human gastrointestinal tract.

Foodborne illness: A human illness, with evidence (including epidemiological and/or laboratory-derived evidence) indicating a food was the source of exposure to the hazardous agent causing illness. The hazardous agent may include bacteria, viruses, parasites, toxins, or chemicals. It may be a contaminant or naturally present in the food. Foodborne illness occurs when a person consumes the food contaminated with a hazard agent.

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Foodborne injury: Damage to the human gastrointestinal tract resulting from the consumption of a food contaminated with physical hazards.

Food safety investigation: Investigation activities, including inspection of food premises, sampling, observation of food handling practices, data gathering, and other related activities undertaken by regulatory officials to determine whether a foodborne hazard exists or has the potential to cause an adverse health effect, and to determine the nature and extent of the problem. In the case of a foodborne illness outbreak, information gathered during the food safety investigation and epidemiological investigation provides the basis for risk assessment and for the development of appropriate risk management strategies to control affected foods.

Food premises: any premises where food or milk is manufactured, processed, prepared, stored, handled, displayed, distributed, transported, sold or offered for sale, but does not include a room used as a dwelling in a private residence, as per the [*Health Protection and Promotion Act*](#).³

Health Risk Assessment (HRA): A scientifically based process that determines the likelihood and severity of a specific adverse health effect occurring in an individual or a population, following exposure to a hazardous agent. The following steps are used in the development of an HRA: 1) hazard identification; 2) hazard characterization; 3) exposure assessment; and 4) risk characterization.

Health Risk I: The health risk identified represents a situation where there is a reasonable probability that the consumption/exposure to a food will lead to adverse health consequences, which are serious, or life threatening, or that the probability of a foodborne outbreak situation is considered high.

Health Risk II: The health risk identified represents a situation where there is a reasonable probability that the consumption/exposure to a food will lead to temporary or non-life-threatening health consequences, or that the probability of a serious adverse consequence is considered remote.

Jurisdiction: For the purpose of this document, the area of geography and primary responsibility of one of Partners.

Multi-jurisdictional foodborne hazard or illness outbreak: A foodborne hazard or illness outbreak that occurs in more than one jurisdiction (i.e.: more than one Ontario board of

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health) and/or requires the resources of more than two Partners to carry out an investigation.

ON-FIORP Primary Representative: An individual by named position within their respective organization, responsible for briefing senior officials within their organization and ensuring that their jurisdiction leads or participates in an Ontario Outbreak Investigation Coordinating Committee, as required. Contact information for the ON-FIORP Primary Representative will be maintained as part of the ON-FIORP Contact List.

Ontario Outbreak Investigation Coordinating Committee (ON-OICC): A committee with representation from the ON-FIORP Partners, created to coordinate a multi-Partner response to a foodborne hazard or illness outbreak in Ontario.

Outbreak: The occurrence of two or more cases of illness (except botulism, where one case constitutes an outbreak) among unrelated persons that are epidemiologically linked in time and experience similar illness after a common source of exposure (which may or may not be identified). An outbreak may be identified through laboratory surveillance or detection of an increase in illness that is unusual in terms of time and/or geography. Presence of an outbreak is confirmed through supporting laboratory and/or epidemiological evidence.

Outbreak Investigation Coordinating Committee (OICC): A committee with representation from the FIORP Partners, which is created to coordinate a multi-Partner response to a foodborne hazard or illness outbreak in Canada.

Partner: For the purposes of this document, any agency with a responsibility to investigate or respond to foodborne hazard or illness outbreaks in Ontario that share food safety and public health responsibilities. In Ontario Partners include:

- [Ministry of Health;](#)
- [Ontario Ministry of Agriculture, Food and Rural Affairs;](#)
- [Ministry of the Environment Conservation and Parks;](#)
- [Canadian Food Inspection Agency;](#)
- [Health Canada;](#)
- [Indigenous Services Canada;](#)
- [Public Health Agency of Canada;](#)
- [Public Health Ontario;](#)
- [Ontario Poison Centre \(OPC\);](#)

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- [Local/regional boards of health](#).

Personal information: Has the same meaning as in section 3 of the [Privacy Act, R.S.C. 1985, Chapter P-21](#),⁴ when referring to information that federal Partners are collecting, using, or disclosing; or section 2 of the [Freedom of Information and Protection of Privacy Act, R.S.O. 1990, c. F. 31](#),⁵ or section 4 of the [Personal Health Information and Protection Act](#),⁶ when referring to information that the provincial and municipal Partners may be collecting, using, or disclosing.

Ready-to-eat food: Foods not requiring any further preparation before consumption, apart from washing/rinsing, thawing, or re-heating.

Recall: The removal from further sale or use, or the correction of its label, at any point in the supply chain as a risk mitigation action.

Response: In the context of foodborne hazard and illness outbreaks, response includes activities related to the determination, investigation, mitigation, and containment of such outbreaks, as well as related communication activities.

Spokesperson: Representative identified by each Partner to communicate with the public and answer enquiries, as required. The spokesperson represents the face of his or her organization.

Tampering, sabotage, or terrorism: Actual or suspected deliberate contamination of food.

Trace-back and trace-forward investigations: A method used by investigators to determine and document the distribution and the origin of a particular food that has been contaminated or associated with a foodborne illness. Depending on where along the food distribution network the investigation begins, trace-back or trace-forward activities are undertaken.

2. List of Acronyms

ARC: Area Recall Coordinator

ASPHIO: Association of Supervisors of Public Health Inspectors - Ontario

BOH: Board of Health

BRS: Botulism Reference Service

CFEZID: Centre for Foodborne, Environmental and Zoonotic Infectious Diseases (PHAC)

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CFIA: Canadian Food Inspection Agency

CFS: Centre of Forensic Services

CIPHI: Canadian Institute of Public Health Inspectors

CMOH: Chief Medical Officer of Health

CNPHI: Canadian Network for Public Health Intelligence (PHAC)

EOC: Emergency Operations Centre

ESD: Enhanced Surveillance Directive

FDASD: Foodborne Disease Antimicrobial Resistance Surveillance Division (PHAC)

FORC: Foodborne Outbreak and Recall Committee

FNIHB: First Nations Inuit Health Branch (Indigenous Services Canada)

F/P/T: Federal/Provincial/Territorial

FSSSD: Food Safety Science Services Division (CFIA)

HC: Health Canada

HPPA: Health Protection and Promotion Act

HRA: Health Risk Assessment (HC)

IHR: International Health Regulations

iPHIS: integrated Public Health Information System

MECP: Ministry of the Environment, Conservation and Parks

MEOC: Ministry's Emergency Operations Centre

MOH: Medical Officer of Health (BOH)

Ministry: Ministry of Health

MOU: Memorandum of Understanding

NESP: National Enteric Surveillance Program (PHAC)

NML: National Microbiology Laboratory (PHAC)

OFSR: Office of Food Safety and Recall (CFIA)

OMAFRA: Ontario Ministry of Agriculture, Food and Rural Affairs

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OMD: Outbreak Management Division (PHAC)

OICC: Outbreak Investigation Coordinating Committee

ON-OICC: Ontario Outbreak Investigation Coordinating Committee

ON-FIORP: Ontario's Foodborne Illness Outbreak Response Protocol

OPC: Ontario Poison Centre

OPP: Ontario Provincial Police

PEOC: Provincial Emergency Operations Centre

PHAC: Public Health Agency of Canada

PHO: Public Health Ontario

PMRA: Pest Management Regulatory Agency (HC)

PSC: Public Safety Canada

P/T: Provincial/Territorial

RCMP: Royal Canadian Mounted Police

WGS: Whole Genome Sequencing

WHO: World Health Organization

3. Introduction

A foodborne hazard or illness results from exposure to a food that has been naturally, accidentally, or intentionally contaminated by biological, chemical, physical, or other hazardous substances. The impacts of foodborne hazards or illness may include increased morbidity and mortality, health care costs, loss of consumer confidence, economic losses, and lost productivity to industry.

The globalization of our food supply has resulted in large volumes of raw and processed products moving across domestic and international boundaries. Consequently, foodborne hazards or illness outbreaks associated with widely distributed foods can result in human illness that crosses local, provincial/territorial, and international boundaries. Regulatory bodies responsible for human health and food safety, monitor and respond to these situations through the development and utilization of enhanced foodborne illness

surveillance networks, including the use of molecular subtyping and other laboratory methods to enable cluster detection and the linkage of seemingly unrelated cases to initiate an outbreak investigation. Ongoing public awareness of food safety demands the swift resolution of food hazard situations at a time when they are becoming increasingly complex, reinforcing the need for collaboration during outbreak investigations and active participation of all Partners in centrally-led efforts to mitigate risk and prevent further illness.

Food safety and public health in Ontario are responsibilities shared by federal, provincial, and local governments. Collaboration among these Partners and across jurisdictions is of utmost importance to effectively manage foodborne hazards or illness outbreaks. Partners recognize that formalized approaches facilitate collaboration and cooperation, protecting the health of Ontarians.

The ON-FIORP provides guidance for collaboration among Partners during the response to foodborne hazards or illness outbreaks in Ontario. The ON-FIORP was reviewed by and shared with Partners and other public health professionals for their endorsement.

4. Purpose

The ON-FIORP is used to coordinate the actions of multiple Partners in the identification and response to foodborne hazards or illness outbreaks. The ON-FIORP is not intended to provide detailed instructions on how to conduct the investigation and response.

The purpose of the ON-FIORP is to set out the key guiding principles and operating procedures for the identification of and response to foodborne hazards or illness outbreaks in Ontario, involving Partners with the ultimate goal of ensuring the efficiency and effectiveness of the response in order to protect the health of Ontarians.

Specifically, the ON-FIORP aims to:

- enhance collaboration and coordination among Partners;
- establish clear lines of communication; and
- facilitate information sharing among Partners.

It is designed in response to suspect or confirmed multi-jurisdictional foodborne hazards or illness outbreaks benefiting from centralized coordination in Ontario.

5. Scope

The ON-FIORP describes a range of activities, including:

- Notification and assessment of a potential multi-jurisdictional foodborne hazard or illness outbreak response;
- Assembling and activating the Ontario Outbreak Investigation Coordination Committee (ON-OICC) for coordination and outbreak investigation;
- Communication and information sharing among Partners;
- Containment of the risk that triggered the outbreak or resolution of the issue; and
- A post-outbreak debrief process.

The ON-FIORP addresses potential foodborne hazards or illness outbreaks resulting from the natural, accidental, or intentional contamination of foods by biological, chemical, physical, or other hazardous substances.

The principles outlined in the ON-FIORP also serve as a guide when human enteric illness outbreaks are caused by contact with animals, their environment or their food (e.g., contaminated pet food and treats, petting zoo animals, contact with pets. Refer to [Annex 3](#) for more information.)

The [ON-FIORP Operating Procedures](#) focus primarily on developing a coordinated response to mitigate foodborne hazards or illness outbreaks. The ON-FIORP does not specifically address the broader risk assessment process that contributes to policy development and standard setting to reduce the risk of future outbreaks; however, during the [post-outbreak debrief](#) there is the opportunity to raise the need for future policy development to manage risk.

6. Guiding Principles

I. Protect the health of Ontarians

The primary objective of the activities described in the ON-FIORP is to mitigate or contain the effects of foodborne hazards or illness outbreaks in a timely and effective manner, thereby protecting the health of Ontarians.

II. Information sharing in a timely and appropriate manner

Subject to applicable laws governing the sharing of information (including privacy, access to information and common law relating to confidential business information), Partners recognize that information required to investigate, control, and resolve a foodborne hazard and illness outbreak is exchanged securely, in confidence, and in a timely fashion between Partners. In alignment with applicable privacy legislation (e.g., [Personal Health Information Protection Act](#)⁶ [PHIPA] and [Freedom of Information and Protection of Privacy Act](#)⁵ [FIPPA]), completed case investigation forms and other investigational information with personal information or personal health information or confidential industry information are only shared in confidence within and between Partners for the purposes of a coordinated multi-jurisdictional outbreak investigation.

Public disclosure of information

Partners recognize that public disclosure of confidential business information may be required when a foodborne hazard or illness outbreak could pose a risk to public health is identified and there is a clear public interest in sharing this information.

Third party disclosure of information

The response to external, third-party requests for information should be coordinated between affected ON-OICC Partners and align with applicable access to information and privacy legislation. Completed case investigation forms shall not be disclosed to any third party.

III. Use the ON-OICC as the central body for coordination and information sharing

The ON-OICC established pursuant to this ON-FIORP serves as the main forum for information sharing and interpretation; clarification of roles and responsibilities; establishment of response priorities, and the development of communications strategies related to a confirmed or suspected foodborne hazards or illness outbreak. While some discussions may need to occur outside of the ON-OICC, all activities, recommendations and decisions feeds back to the ON-OICC in a transparent and timely fashion.

It is recognized that in some instances a provincial outbreak may be declared but the

coordination of an ON-OICC is not required (e.g., very few cases with no obvious source). In this instance, an ON-OICC is not activated but Partners are updated via alternative communications (e.g., email).

IV. Provide assistance to Partners

Whenever possible, Partners implementing the ON-FIORP provide assistance, including laboratory support, as requested during an epidemiological investigation or food safety investigation.

V. Respecting other agreements and relationships in place

The ON-FIORP is intended to complement agreements and procedures established among Partners. Where memoranda of understanding (MOU) or agreements between Partners, regarding food safety surveillance, investigation or control, may exist or are negotiated, these are shared and respected. The ON-FIORP is not intended to substitute for the ongoing relationships between Partners necessary to discharge other responsibilities and to manage situations as they arise.

VI. Weight of evidence

Laboratory, epidemiological, and/or food safety investigation evidence is used to establish the association between a particular food or foods or other common exposure sources and human illness.

VII. Active engagement in ON-FIORP

Partners are encouraged to raise awareness of the ON-FIORP within their own jurisdiction, agency, or organization by distributing the document to their senior management and foodborne hazard or illness outbreak response Partners. Partners are also encouraged to participate in simulation exercises and training, where possible and by participating in ON-OICCs, as appropriate.

VIII. Publication

Publication of information related to multi-jurisdictional foodborne hazard or illness outbreaks investigated collaboratively through an ON-OICC will not occur without notification to all Partners engaged in the investigation and response whose data is

included in the publication.

7. Roles and Responsibilities

Depending on the scope of the outbreak, responsibilities for responding to foodborne hazards or illness outbreaks may be shared between federal/provincial/local jurisdictions. The response involves collaboration and cooperation among all those involved.

7.1. Provincial Authorities

Provincial Partners who may play a role include the [Ontario Ministry of Health](#) (Ministry), the [Ontario Ministry of Agriculture, Food and Rural Affairs](#) (OMAFRA), the [Ontario Ministry of Environment, Conservation and Parks](#) (MECP), [Provincial Emergency Operations Centre](#) (PEOC), [Public Health Ontario](#) (PHO) and the [Ontario Poison Centre](#) (OPC).

As outlined in the [Ministry Emergency Response Plan](#),⁷ and in response to a potential hazards incident that could impact the healthcare system, escalation to the [Ministry's Emergency Operations Centre](#) (MEOC) or to [PEOC](#), depending on the impact of the incident, may be necessary.⁸

If it is suspected that an outbreak is related to criminal activity (e.g., tampering, sabotage, terrorism), law enforcement agencies (local police, provincial police, or the Royal Canadian Mounted Police) assume the responsibility for the law enforcement response and criminal arm of the investigation. In the event of a bioterrorism incident/event that exhausts local capabilities, the PEOC would become the lead provincial agency, while the Health Systems Emergency Management Branch (HSEMB) would coordinate the health system response.

7.1.1. Ontario Ministry of Health

Under the [Ontario Public Health Standards](#),⁹ the Ministry outlines the minimum program requirements, and provides legislative and policy oversight to the boards of health (BOHs) in the delivery of public health programs and services in the prevention of hazards and the prevention and reduction in the burden of foodborne illness. The Ministry supports food safety investigations and outbreak activities with partners, health care professionals, and the public. The Ministry is the lead for public health communications provincially. The Ministry provides some medications or vaccinations that may be required during an outbreak response (e.g., hepatitis A vaccine, botulism antitoxin).

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For infectious disease notifications pertaining to the ON-FIORP, the Ministry is the lead health authority in Ontario to support International Health Regulations (IHR) notifications.

As outlined in the under the [Ontario Public Health Standards](#),⁹ any request for assistance from PHAC's Canadian Field Epidemiology Program (CFEP) should be directed to the Ministry who then submits the request on behalf of the BOH or PHO.

Under the [Emergency Management Civil Protection Act, R.S.O 1990](#),¹⁰ the Ministry is also responsible for ensuring the availability of health services during an emergency (such as a mass illness event), and the formulation of plans for emergencies that fall under its responsibilities of human health, disease, and epidemics.

7.1.2. Ontario Ministry of Agriculture, Food, and Rural Affairs

OMAFRA contributes to the prevention, investigation, and control of foodborne hazards and illness outbreaks through OMAFRA's administration, inspection, compliance, and enforcement activities in situations where the incident is confirmed to be, or is potentially, linked to food produced or processed in one of OMAFRA's regulated entities. Food processors regulated by OMAFRA include:

- Provincially licensed abattoirs
- Free-standing meat plants
- Provincially licensed free-standing meat plants (FSMPs)
- Provincially licensed dairy plants
- Provincially licensed fish processing plants
- Produce, honey and maple processors and retailers

In situations where OMAFRA plays an active role in food safety investigations, OMAFRA may assist by inspecting a regulated facility and sharing inspection reports and sample/test results with ON-FIORP Partners. Regulations under the [Food Safety and Quality Act, 2001](#), S.O. 2001, c. 20¹¹ provide OMAFRA with powers to inspect facilities which process honey, maple, produce (fruits and vegetables), eggs or processed eggs, meat and fish products. Regulations under the [Milk Act, R.S.O. 1990](#),¹² c. M.12 provide OMAFRA with inspection and enforcement powers pertaining to milk, raw milk, and cream products. The extent of OMAFRA's inspection and enforcement powers when it comes to the aforementioned food products is limited to provincially registered processors but excludes food products originating from federally registered processors.

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In the event of an animal health related investigation or enteric illness outbreak investigation linked to contact with animals or animal feed, OMAFRA may support the epidemiological investigation or provide education about animal handling and sampling techniques.

7.1.3. Ontario Ministry of the Environment, Conservation and Parks

With the exception of drinking water related outbreaks or hazards, the role of the MECP in foodborne hazards or illness outbreaks is limited to a supporting role and to situations where the incident may require application of the various legislation that falls under its jurisdiction and mandate.

The MECP plays a role when requested by OMAFRA or the Ministry.

For situations related to drinking water, MECP plays a lead role with emergency response, and with investigations, follow-up, and corrective actions applicable to any drinking water system that is regulated under the [Safe Drinking Water Act, 2002, S.O. 2002, c. 32](#).¹³ If no such system is involved, MECP plays a supporting role in a waterborne illness investigation when requested by the Ministry, PHO, OMAFRA, or a BOH.

7.1.4. Public Health Ontario

PHO conducts routine surveillance of diseases of public health significance through the analysis of data extracted from the provincial electronic disease reporting system (the integrated Public Health Information System (iPHIS) data, PHO's laboratory data, and in response to notifications received from local BOHs, provincial/territorial (P/T) and national/international partner agencies. PHO also receives notifications of national clusters of cases from the PHAC and the National Microbiology Lab. PHO provides provincial laboratory services including primary clinical, water and environmental and food testing at the request of BOHs, to support foodborne, waterborne and enteric disease investigations. PHO coordinates and provides reference services for microbial strain identification, characterization and molecular subtyping of isolates submitted from hospital, community and private laboratories, and participates in national foodborne illness surveillance programs such as PulseNet Canada and the [National Enteric Surveillance Program \(NESP\)](#).¹⁴

PHO conducts surveillance for clusters and potential outbreaks of [diseases of public health significance \(DOPHS\)](#)¹⁵ and completes analyses of available information. PHO shares

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relevant findings with Partners. PHO conducts hypothesis generation (e.g., re-interviews cases, obtains case purchase records). PHO provides scientific and technical input on:

- Interventions aimed at mitigating the outbreak;
- Laboratory support; and
- Supports local BOHs during outbreak and food safety investigations.

PHO participates on national Outbreak Investigation Coordinating Committees for PHAC-led outbreaks and brings forward information on Ontario cases. PHO provides scientific and technical input to the Ministry of Health to inform case and outbreak management guidance and support legislation and policy decisions.

PHO is the lead in coordinating outbreaks under the ON-FIORP.

7.1.5. Ontario Poison Centre

The role of the OPC (1-[800]-268-9017) is limited to assisting clinicians in hospital settings and partners in managing specific toxin-related cases or questions. OPC advises clinicians on toxin testing and treatment options and can assist with identifying which lab has the ability to test unusual toxins. OPC is available for consultation with ministry partners, PHO and local PHUs.

7.2. Local Authorities

7.2.1. Boards of Health

Local BOHs have the mandate under the [Ontario Public Health Standards](#)⁹ to receive and investigate reports of diseases of public health significance in accordance with the [Health Protection and Promotion Act \(HPPA\)](#).³

The BOHs generally request ongoing joint inspections with relevant Partners (i.e., CFIA, OMAFRA) of the food premises throughout the investigation as indicated. This is done in order to provide a thorough and seamless inspection with prompt and accurate communication between the Partners involved and to attempt to avoid the potential for overlap of inspection duties, investigative functions, expenses, laboratory testing, or sampling. This minimizes the potential for inconsistent or confusing food safety messaging to the media, the public, or other Partners (e.g., laboratory, the Ministry or PHAC).

The role of the BOHs in the investigation of food premises associated with foodborne hazards or illness outbreaks include:

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- Receiving and investigating any report of a foodborne hazard, suspect foodborne illness, or enteric illness cluster. Investigation may include attempts to identify risk factors and potential sources of the hazard or illness. If food from a food premises is believed to be the source of a hazard or illness, and the BOH is not the primary agency responsible for its routine inspection, the appropriate agency is notified by the BOH. Where warranted, arrangements for collaboration and joint inspections with all necessary Partners (e.g., OMAFRA, CFIA) are made;
- Investigation of any cases/contacts involved in the foodborne hazard or foodborne illness incident. This may include requesting suspect cases to submit stool or other (e.g., blood or urine for toxins) clinical samples in attempts to identify a causative agent for the incident;
- The BOH may also recommend control measures for the suspect cases to follow in order to reduce secondary spread of the causative agent;
- The BOH may support the collection of blood and/or urine samples for clinical analysis if toxins are suspected;
- Public notification regarding the foodborne hazard or illness incident as required, in collaboration with the ON-OICC;
- Investigations may include conducting a food safety inspection (incorporating Hazard Analysis and Critical Control Point [HACCP] based principles), interviewing owners/operators/staff at the food premises, sampling of suspect foods, water samples, and/or the environment samples, seizure and possible condemnation of suspect foods and/or equipment, reviewing records/reports/receipts/procedures, observing food handling practices and food premises operations, exclusion of ill food handlers, possible requirement for food handlers to submit clinical samples for laboratory analysis, possible closure of the food premises, and/or restriction on certain food handling activities within the food premises; and
- The BOH may strive to identify the root cause of the contamination in the implicated food premises.

The local medical officer of health (MOH), or his/her delegate, may also be required to implement enforcement activities during investigation of a food premises associated with a foodborne hazard or foodborne illness outbreak involving non-compliance with applicable legislation. Potential actions may include:

- Issuing Orders under Section 13 (health hazard);

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- Section 19 (seizure, examination, destruction); and/or
- Section 22 (communicable disease) of the [HPPA](#),³ Provincial Offences Notices, and/or Summons.

Upon suspicion and/or confirmation of food safety or sanitation situations beyond the retail/wholesale level of the operation, the MOH or their delegate provides notification to the appropriate agencies (i.e., CFIA, OMAFRA) and includes, upon request, inspection details, and any findings. If suspicion of a toxin-related case arises, the MOH or their delegate should notify the Ministry of Health, PHO, and OPC.

Outbreaks meeting the following criteria are generally led by the local BOH:

- Cases are in only one BOH jurisdiction; and
- Appear to be point source / event based; and
- Do not require provincial coordination.

Assistance may be sought from provincial Partners (e.g., PHO, Ministry) as needed. If coordination of a BOH-led outbreak is subsequently felt to be required, the ON-OICC process may be initiated.

7.3. Federal Authorities

Federal Partners (under the federal Minister of Health) with legislated responsibilities for responding to foodborne illness-related events include the CFIA, HC, and the PHAC. Expertise from other federal/provincial/territorial (F/P/T) or international agencies may be sought to provide advice in the control of outbreaks caused by rare hazardous substances in foods.

7.3.1. Canadian Food Inspection Agency

The CFIA delivers all federal inspection and enforcement services related to food under the authority of the [Safe Food for Canadians Act \(SFCA\)](#)¹⁶ and the [Food and Drugs Act \(FDA\)](#)¹⁷ and their respective regulations that address all stages of the food continuum. The CFIA contributes to the investigation and control of foodborne hazards or illness outbreaks by conducting food safety investigations, food testing and recall activities, as well as its regulatory compliance and enforcement activities. The CFIA acts as the main point of contact with international food safety authorities when a foodborne hazard or illness outbreak involves Canada and another country.

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When a potentially contaminated food that could pose a risk to the public has been identified, the CFIA launches a food safety investigation to:

- Determine whether a food safety hazard exists;
- Assess the nature and extent of the issue;
- Strive to identify the root cause of the contamination in the affected food (if it was produced at a license holder's facility);
- Take appropriate actions to eliminate or minimize potential risks to consumers.

The CFIA's role in food safety investigations includes tracing foods from the retail level through distribution to production or processing facilities to pinpoint a suspected source of the problem. Information obtained throughout the food safety investigation provides the basis for the assessment of risk and the development of appropriate risk mitigation strategies to control affected products. The food industry carries out most recalls voluntarily. However, if a company is not available or willing to conduct the recall voluntarily, the Federal Minister of Health can, under the [Canadian Food Inspection Agency Act](#),¹⁸ order a company to recall a product where the Minister believes that it poses a risk to public, animal, or plant health. In the case of voluntary recalls, the CFIA officials verifies that the recalling firm has recalled the product effectively.

This work is done collaboratively with Partners guided by MOUs. CFIA works closely with all Partners to share expertise and co-ordinate activities to facilitate the food industry's compliance with both federal and provincial regulations and the delivery of emergency response.

There are three groups within the CFIA that play key roles in the food safety response to foodborne hazard or illness outbreak situations:

- Area inspection staff, including the Area Recall Coordinator (ARC), is involved in food safety investigation activities. The ARC is the usual first point of contact within the CFIA for local/regional health units, the Ministry, and PHO. Should an ON-OICC assessment call take place and the CFIA is invited to attend, both the Ontario ARC and the Office of Food Safety and Recall (OFSR) should participate on the call.
- The OFSR is responsible for the national coordination of food safety investigations and recalls and provides the link with HC for obtaining health risk assessments (HRAs), as appropriate. The OFSR is the usual first point of contact for national and international food safety related situations.

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- The Food Safety Science Services Division (FSSSD) of the Food Safety Science Directorate is responsible for providing scientific advice; coordinating food testing activities; testing for food and environmental samples, which includes the use of other laboratories; and interpreting and communicating laboratory results of sampling for foodborne illness outbreaks and food safety investigations.

7.3.2. Health Canada

HC is the federal department responsible for setting the regulations and standards for the safety and nutritional quality of food sold in Canada. Its food safety responsibilities include:

- Establishing policies, regulations and standards related to the safety and nutritional quality of all food sold in Canada—Food Directorate;
- Regulating pesticides—Pest Management Regulatory Agency (PMRA);
- Managing human health and safety risks associated with consumer products—Consumer Product Safety Directorate (CPSD);
- Evaluating the safety of veterinary drugs used in food-producing animals—Veterinary Drugs Directorate.

HC may be involved or assist with investigations of foodborne hazard or illness outbreaks as follows.

The Food Directorate focuses on situations relating to microbial pathogens, chemical contaminants, marine biotoxins, undeclared food allergens or other potential health hazards in foods. Specifically, the Food Directorate provides:

- HRAs on food-related hazards to the CFIA or other stakeholders (e.g., P/T governments);
- Scientific advice and analytical surge capacity for analyzing microbiological contaminants, chemical contaminants, non-permitted food additives, chemicals associated with the use of food packaging materials, processing aids, and incidental additives, and undeclared food allergens in food and clinical samples;
- National laboratory reference services for foodborne botulism, (through the Botulism Reference Service [BRS]), listeriosis (through the Listeriosis Reference Service), *Vibrio* (through the *Vibrio* reference Service), and foodborne viruses (through the Food Virology Reference Centre);
- Risk management advice, including public communication.

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The PMRA provides, upon request, HRAs on pesticide residues exceeding the legal limits to the CFIA or other stakeholders. It also contributes to investigations involving incidences of pesticide residues above the legal limits.

The CPSD, under the [Canada Consumer Product Safety Act](#),¹⁹ helps address and prevent dangers to human health and safety that are posed by consumer products in Canada.

The Veterinary Drugs Directorate is responsible for setting maximum residue limits for veterinary drugs in foods.

7.3.3. Public Health Agency of Canada

The Public Health Agency of Canada (PHAC) is focused on promoting good health, preventing and controlling infectious and chronic disease and injury, and emergency preparedness and response. There are several areas within PHAC that may participate in an ON-OICC. Within PHAC's Centre for Food-borne, Environmental and Zoonotic Infectious Diseases (CFEZID), the Outbreak Management Division (OMD) is the usual first point of contact for notification of situations related to actual or potential foodborne hazard or illness outbreaks. The role of OMD includes:

- Coordination of the response to multi-jurisdictional foodborne illness outbreaks involving more than one P/T or involving Canada and another country or countries where appropriate;
- Provision of consultation and content expertise in foodborne outbreak investigations, as requested; and
- Interpretation and comment on the weight of epidemiologic evidence collected during the investigation of enteric illness outbreaks with a food source.

Also, within CFEZID, the Foodborne Disease and Antimicrobial Resistance Surveillance Division (FDASD):

- Conducts national surveillance for enteric illnesses (e.g., NESP, Enhanced National Listeriosis Surveillance Program);
- Collaborates and leads sentinel site surveillance (FoodNet Canada);
- Provides consultation and surveillance content expertise in foodborne outbreak investigations as requested/required; and
- Collaborates on international surveillance activities.

Both OMD and FDASD also provide training in enteric disease surveillance and outbreak

investigation methods. PHAC acts as the IHR national focal point, which is the national centre designated to communicate with the World Health Organization (WHO) IHR Contact Points under the regulations.

The NML provides reference services for strain identification and characterization, national laboratory-based surveillance, and dissemination of information through PulseNet Canada and NESP. The NML, through PulseNet Canada, is a primary point of contact for P/Ts sharing strain identification data and the detection of clusters of strains that are occurring in more than one P/T, indicating the potential for multi-jurisdictional foodborne outbreaks.

PHAC, through the CFEP, can provide epidemiologic surge capacity resources on request that can be mobilized to assist in the investigation of enteric illness outbreaks. The Ministry must submit any request from Ontario, including PHO, for assistance from PHAC's CFEP.

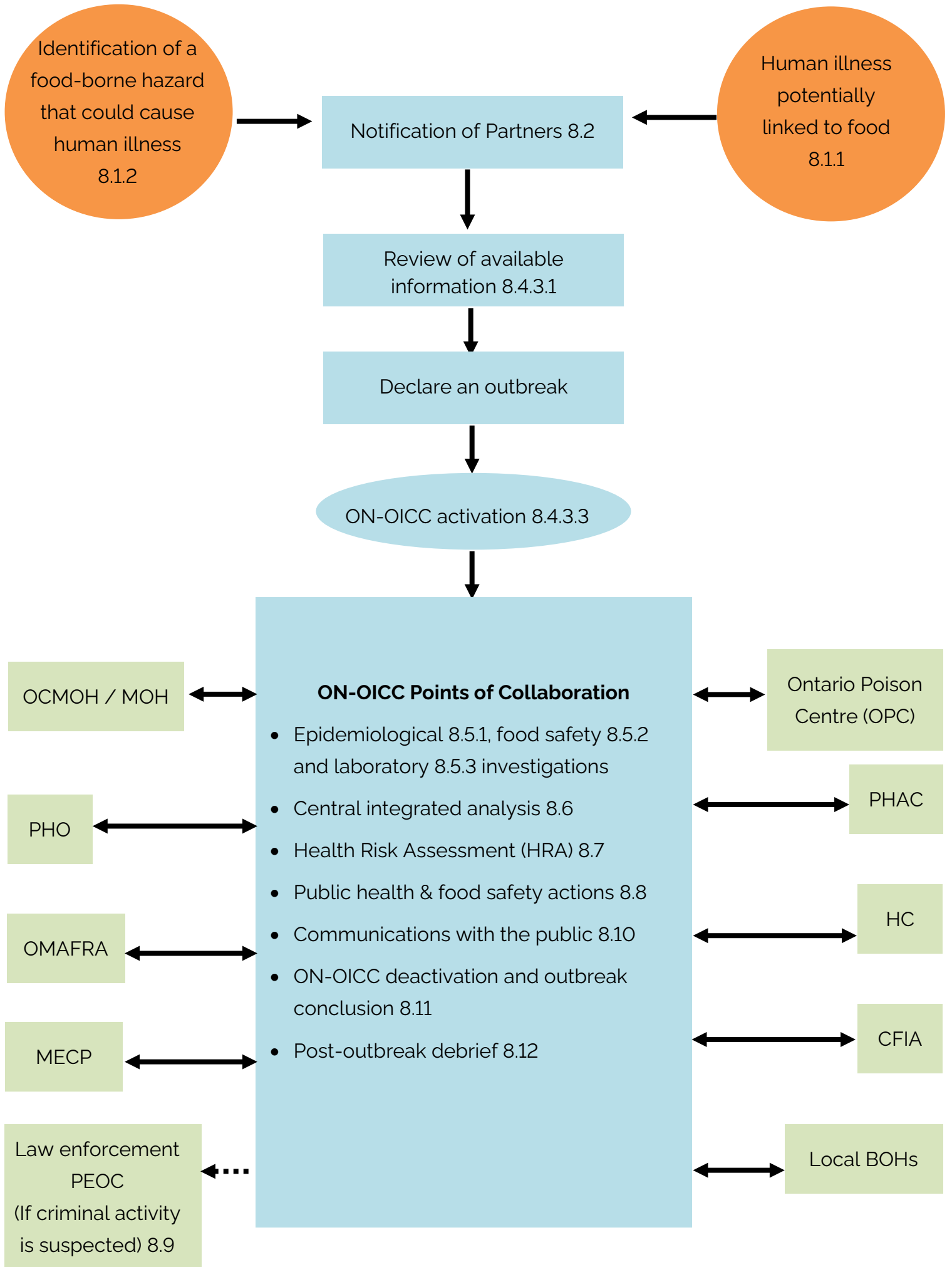
7.3.4. Indigenous Services Canada

The First Nations Inuit Health Branch (FNIHB) provides support and technical advice in the investigation of foodborne illnesses for First Nations communities on reserves south of 60 degrees parallel. The Primary Health Care and Public Health Directorate within FNIHB is the national contact point between the FNIHB regional offices and other involved Partners (e.g., the CFIA) during a suspected or confirmed foodborne outbreak in First Nations communities. FNIHB regional staff disseminate food recall information issued by the CFIA, carry out food safety investigations in food establishments, conduct visits at facilities with vulnerable populations (e.g., daycare, treatment centres, hospitals), and provide public education and food handler training sessions, as needed, in affected First Nations communities.

8. Operating Procedures

This section outlines the general operating procedures for coordinating the response to a potential or confirmed multi-jurisdictional foodborne hazard or illness outbreak in Ontario. [Figure 1](#) provides a schematic overview of the communication pathways and activities of Partners when a foodborne outbreak is suspected or confirmed in Ontario.

Figure 1. Communication pathways and activities of Partners when a foodborne hazard or outbreak is suspected or confirmed in Ontario.



8.1. Identification of a Potential Multi-Jurisdictional Foodborne Hazard and/or Illness Outbreak

A potential multi-jurisdictional foodborne hazard and illness outbreak may be identified through reports of human illness (surveillance) or the identification of a hazard that could cause human enteric illness. Examination of surveillance data and the determination of cases in more than one jurisdiction in Ontario could prompt further investigation and notification to affected Partners.

8.1.1. Human Enteric Illness Surveillance and Identifying Potential Outbreaks

Human health surveillance activities occur at BOH, provincial, federal, and international levels. Activities at the BOH level are based on surveillance and investigation of [Diseases of Public Health Significance](#)¹⁵ reported by laboratories and health care providers, as well as complaints of foodborne hazards or illness from the public. At the provincial level, surveillance is based on reports of Diseases of Public Health Significance and laboratory data. Additionally, provincial and federal level surveillance is based on laboratory surveillance, including molecular subtyping. Identification of human enteric illnesses that may indicate an outbreak may originate from the following sources:

- Enteric illness clusters or potential outbreaks recognized by a BOH through increased reporting of an enteric pathogen or complaints of enteric illness linked to a common exposure.
- Routine enteric illness surveillance activities at the provincial or federal level indicating that a possible enteric outbreak, potentially foodborne in nature, is in progress (e.g., laboratory-based surveillance or monitoring of iPHIS, PHO, NML, NESP or PulseNet Canada data).
- Cross-border notification (e.g., Great Lakes Border Health Initiative, Centers for Disease Control and Prevention).

8.1.2. Identification of a Foodborne Hazard that Could Cause Human Enteric Illness

Food safety investigations may be triggered by the following situations:

- Consumer complaints concerning a food, which may involve reports of illness.
- Deviations in food preparation, processing, storage, and transport identified during

inspection activities.

- Routine sampling and testing activities that detect the presence of a hazardous contaminant (e.g., biological, chemical, physical, or other hazard) in a food.
- Notification from industry (e.g., manufacturer, processor, distributor, importer, or common carrier) of a potential food safety problem.
- Information about a food safety problem from other external sources (e.g., foreign health officials, industry, public health associations, academia).
- Emergencies such as major fires, natural disasters, industrial accidents that result in the contamination of food or water or that impact safe food handling.
- Tampering, sabotage, or terrorism events involving the contamination of a food product ([Section 8.9](#)).

8.2. Notification between Partners of a Potential Multi-Jurisdictional Foodborne Hazard and/or Illness Outbreak

Notification refers to the initial communication between Partners to indicate an issue or identification of an outbreak. Notification may occur through different means and involves the exchange of public health and food safety information. Each Partner continues monitoring activities and conducts their individual internal assessment and investigation until they have identified a need for further coordination.

A provincial outbreak may be declared without having an ON-OICC assessment call or activating the ON-OICC (e.g., if there are a small number of cases and provincial coordination is not needed). In this instance, the ON-OICC Lead communicates and notifies Partners in a timely manner. Notification of Partners may be done via email, outlining the epidemiological information, laboratory evidence, and any food safety findings to date. This notification also outlines the investigation plan moving forward (e.g., continue to monitor, centralized case re-interviewing). Further email updates are provided as new information becomes available. An ON-OICC assessment call may subsequently be initiated if the situation evolves and/or at the request of Partners.

The Public Health Alert function within Canadian Network for Public Health Intelligence (CNPHI) is one of several effective communication tools used for early notification of possible or confirmed outbreaks. Local/regional health officials and F/P/T health officials

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have access to CNPHI, in addition to some F/P/T agricultural authorities.

Enhanced Surveillance Directives (ESDs) are published in a weekly report issued by PHO. ESDs provide information and directives to BOHs with respect to ongoing outbreaks and evolving situations that require timely or expedited reporting and investigation of cases and exposures. Monitored Situations may be included in the weekly report to share information about an outbreak/situation that requires no immediate action by BOHs beyond routine case management and reporting in iPHIS.

The following are examples of situations that may indicate the existence of an Ontario multi-jurisdictional foodborne hazard or illness outbreak and/or situations that require notification of Partners. Partners at any level (BOH, provincial, or federal) should notify other Partners when the following situations are identified, to allow a complete assessment of the available information:

- A cluster of illnesses or cases with illness above expected are spread over more than one geographic jurisdiction (more than one BOH).
- Management of outbreak involves multiple Partners (e.g., public health, agriculture and agri-food, food regulatory, emergency management) irrespective of the number of geographic jurisdictions with reported illnesses.
- An uncommon, unusual, or particularly pathogenic organism is suspected or involved (e.g., *Clostridium botulinum*).
- Severe illness or deaths are observed among identified cases.
- A vulnerable population is over-represented among cases (e.g., children).
- The outbreak is known to be, or has the potential to be, related to a widely distributed food item.
- A large number of unexplained illnesses appear to be involved.
- Identification of a foodborne hazard.
- Intentional contamination (e.g., tampering, sabotage, or terrorism suspected).
- The outbreak is expanding rapidly.
- Significant media attention is occurring or expected.

Where a potential public health emergency of international concern may exist, as described in the IHR (<http://www.who.int/ihr/en/>), PHAC is required to notify international Partners.

If notification of international Partners is required, the responsible federal Partner acts as

liaison with other foreign countries. In international foodborne hazards or illness outbreaks, PHAC-OMD acts as the main liaison with international public health counterparts. CFIA acts as the main liaison with international food safety counterparts for international food-safety related situations.

8.3. Routine Weekly Teleconferences among Partners

Routine weekly teleconferences are held for the purposes of sharing information pertaining to any ongoing foodborne surveillance findings of potential concern. Calls take place on a regular basis between select provincial and federal Partners whether or not there are any ongoing outbreaks.

The teleconferences cover increases in illnesses reported and the identification of hazards that could lead to illnesses. Sharing occurs to the extent permitted by each Partner's legislation and policies on information sharing, allowing Partners to identify potential outbreaks and linkages to food sources at an early stage. Federal and provincial health and food safety Partners attend the teleconferences. If the situation warrants, further communications among Partners may be initiated.

8.4. Ontario Outbreak Investigation Coordinating Committee (ON-OICC)

A central element of the ON-FIORP is the establishment of an ON-OICC to coordinate a multi-jurisdictional response to a foodborne hazard or illness outbreak in Ontario. All Partners are requested to participate in the ON-OICC until it is deemed that their involvement is not required.

8.4.1. Purpose of the ON-OICC

In a timely and effective manner, the ON-OICC coordinates among Partners:

- The outbreak or food safety investigation (i.e., identifying the source of the outbreak);
- The outbreak or foodborne hazard response;
- Communication to the public and/or industry; and
- The post-outbreak debrief.

The ON-OICC achieves this by:

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- Facilitating communication and sharing of information and expertise among participants, and clarifying roles and responsibilities;
- Serving as a central point to share information from all sources and discuss findings;
- Making decisions on investigative approaches;
- Formulating and communicating outbreak response strategies and coordinating investigations among Partners, such as follow-up and corrective actions;
- Identifying resource needs and opportunities for sharing resources;
- Establishing priorities for response where critical resources are limited or constrained;
- Gaining consensus in resolving situations that emerge; and
- Developing comprehensive external communication strategies to ensure the release of consistent and complementary messaging to stakeholders and the public.

8.4.2. Composition of the ON-OICC

The ON-OICC is comprised of representatives designated to act on behalf of Partners involved in the foodborne hazard or illness outbreak investigation. It is the responsibility of each Partner to determine its own appropriate representation on the ON-OICC. One representative from each Partner is identified at the beginning of each ON-OICC call, to report on his or her organization's activities. The representative may also involve colleagues from their own organization, to provide additional support; however, Partners should strive to limit representation on the ON-OICC to the responsible people required for investigation and response to the outbreak.

The composition of the ON-OICC depends on the nature of the foodborne hazard or illness outbreak and may evolve as knowledge related to the source of the outbreak is generated. The ON-OICC should, at minimum, have representatives that provide epidemiological, food safety, laboratory, and communication expertise from the different levels of government required. Other agencies, such as the PHAC, law enforcement agencies and the Coroner's Office, may also participate as required.

Law enforcement agencies may be invited to participate in the ON-OICC if tampering, sabotage, or bioterrorism is identified or suspected. Please see the [Ministry of Health's Emergency Response Plan](#)⁷ for further details. [Section 8.9](#) provides information on how to involve law enforcement.

8.4.3. ON-OICC Assessment and Activation

8.4.3.1 Share and review available information

The Partner that initially becomes aware of the potential foodborne illness or hazard reviews all available information to determine the public health implications and if deemed to be appropriate, notifies the appropriate ON-FIORP contacts. Efforts are made to collect and summarize all appropriate information that may be shared between Partners.

8.4.3.2 ON-OICC Assessment Call

When appropriate, a teleconference call is held among affected Partners to review the available information and decide whether an ON-OICC should be activated. If Partners agree that an ON-OICC is not required at that time, monitoring continues and an ON-OICC assessment call may be held if new information warranting collaborative assessment becomes available.

As noted in [Section 8.2](#), a provincial outbreak may not always require an ON-OICC assessment call.

8.4.3.3 ON-OICC Activation

Considerations for activating an ON-OICC may include:

- The outbreak is known to be or has the potential to be linked to a distributed food source and is not obviously linked to a common source event confined within the BOH jurisdiction (e.g., not obviously linked to travel, a catered event, a single location of restaurant).
- Cases are occurring in more than one BOH.
- The outbreak requires or benefits from provincial coordination (e.g., the use of the ON-FIORP enhances collaboration, information sharing, and coordinating actions and communications).
- Actions or follow-up required from food safety Partners (e.g., product sampling, product trace-back).
- Severity and scope of outbreak (e.g., larger than expected number of cases linked by laboratory evidence, severe illness or deaths, unusual pathogen, vulnerable population, new cases continue to be identified).

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- Media attention has occurred or is likely to occur or public communication is required.

Where evidence exists that a food product is likely the cause or has the potential to be the cause of a multi-jurisdictional outbreak within Ontario, any Partner involved in an epidemiological or food safety investigation may request that an ON-OICC be established under the leadership described below.

The decision to activate an ON-OICC is based on consensus where possible. Where consensus cannot be reached, the ON-OICC activation proceeds if the majority of Partners agree and there are no strong objections raised by Partners. Where there are strong objections that cannot be resolved, guidance from senior public health officials may be sought.

Human illness or injury are not required for an ON-OICC to be activated; if a foodborne hazard with the potential to cause human illness or injury is identified, an ON-OICC may be activated. When a potentially contaminated food has been identified in Ontario that could pose a risk to the public, the BOH or CFIA initiates a food safety investigation ([Section 8.7](#)).

When an ON-OICC is activated, the ON-OICC Lead ([Section 8.4.4](#), [8.4.5](#)) asks the Primary Representatives ([Section 8.4.6](#), [Annex 4](#)) to inform their senior management.

An ON-OICC may not be required when an outbreak involves cases in only one BOH and provincial coordination is not required (e.g., a point source / event-based outbreak affecting a single BOH).

BOHs or provincial Partners may request the assistance from other Partners, as required (e.g., PHO, Ministry, PHAC, CFIA). If provincial coordination is felt to be required, the ON-OICC process is initiated.

8.4.4. Determination of the ON-OICC Lead

PHO leads with regard to the coordination of ON-OICCs when the outbreak is limited to Ontario. It is recognized that other Partners may take the lead in specific aspects of the investigation, as appropriate.

If it is determined that the outbreak involves more than one P/T or has an international component, consultations between Ontario and PHAC will occur to determine the lead. If the outbreak is determined to be best led by PHAC, PHAC (CFEZID) activates a national OICC, in accordance with Canada's FIORP. The existing ON-OICC will then be deactivated.

Information sharing among Ontario Partners and investigation of Ontario cases continues as appropriate to contribute to the national investigation.

8.4.5. Responsibilities of the ON-OICC Lead

The ON-OICC Lead is responsible for:

- Notifying all ON-FIORP Primary Representatives ([Section 8.4.6](#), [Annex 4](#)) that an ON-OICC will be or has been activated or deactivated, and providing summaries of ON-OICC activities and actions;
- Centralized collation and analysis of data;
- Managing meetings, including: chairing the ON-OICC teleconference calls; recording and distributing minutes that include discussion summaries and action items; and maintaining documentation of the response effort;
- Disseminating information in formats required for the response to progress (e.g., outbreak and/or investigations summaries, epidemiological assessments, health risk assessments); and
- Managing the debrief and distributing the debrief summary.

8.4.6. Responsibilities of the ON-FIORP Primary Representatives

Each Partner identifies a named position within its organization to serve as a Primary Representative. Upon notification by the ON-OICC Lead, the Primary Representative is responsible for notifying and ensuring their senior officials are appropriately briefed. The Primary Representatives are responsible for ensuring that there is appropriate representation from their respective Partners on the ON-OICC.

Contact information for the Primary Representatives is maintained as part of the ON-FIORP Contact List ([Annex 4](#)). PHO maintains the ON-FIORP Contact List.

8.4.7. Information Sharing between ON-OICC Partners

The leads for the various investigations (epidemiological, food safety, and laboratory; [Sections 8.6-8.8](#)) are responsible for coordinating communication and sharing pertinent information. If possible, information should be shared with affected Partners in advance of ON-OICC calls. Written investigation summaries and updates (e.g., epidemiology summaries, food safety investigation summaries) are shared with the ON-OICC, through the ON-OICC Lead, in a timely manner either in advance of the call or as soon as possible

after the ON-OICC call. All documents relevant to the ON-OICC (e.g., epidemiologic summaries, foodborne investigation summaries, minutes of ON-OICC calls, food trace-back diagrams, whole genome sequencing trees) are posted by the ON-OICC Lead on the Ontario Outbreak Central site on CNPHI.

Information sharing provides necessary information to investigate and resolve the food safety situation, which may include the sharing of personal or personal health information or third-party information. Information may be exchanged in confidence between Partners when a foodborne hazard or illness outbreak is identified, to protect the health of Ontarians. The exchange of information among Partners is conducted according to applicable provincial legislation (e.g., *Personal Health Information Protection Act* [PHIPA] and *Freedom of Information and Protection of Privacy Act* [FIPPA]), and/or federal access to information and privacy legislation and common law principles, and existing information-sharing arrangements. Confidential information shared may include exposure or food line lists, distribution lists, inspection findings, background information/history of a food premises facility, sampling results, and case purchase record.

For more details on information sharing, refer to [Section 6](#), Guiding Principles.

8.4.8. Decision-Making and Resolving Differences in Opinion

The ON-OICC strives to reach consensus-based decisions on strategies for response, while recognizing that each Partner has unique legal obligations, policies, and mandates that must be respected. Any decisions made by one Partner, pursuant to its obligations but related to the purpose of the ON-OICC, should be communicated to all ON-OICC Partners. All feedback put forward by ON-OICC Partners is taken into consideration in arriving at a final decision.

The ON-OICC attempts to resolve differences of opinion during the course of an outbreak. When consensus cannot be reached or when additional management guidance is needed, Partners should seek guidance from senior officials in their respective organizations through their ON-FIORP Primary Representative. Senior officials should confer together if possible. The ON-OICC determines whether engagement of formal senior decision-making bodies is warranted; senior public health officials may also choose to convene if they feel it is necessary ([Section 8.4.9](#)). Decisions made by senior officials in resolving the issue should be communicated to all ON-OICC Partners.

8.4.9. Engagement of Senior Public Health Officials

In some situations (e.g., exceptional outbreaks involving serious human health implications or garnering significant public, media, or political interest), the Ontario Chief Medical Officer of Health (CMOH) and other Ministers or Directors may choose to convene outside of the ON-OICC to discuss aspects of outbreak management. These aspects may include, but are not limited to, addressing specific situations related to the public health actions and public communications.

The CMOH may request that a meeting with senior public health officials be convened at any time during a significant Ontario multi-jurisdictional foodborne hazard or illness outbreak.

The ON-OICC Lead participates in the meeting(s) to ensure continuous coordination and communication with the ON-OICC. The ON-OICC Lead reports back to the ON-OICC on key actions and decisions.

8.5. Coordinated Investigations

8.5.1. Epidemiological Investigations

To facilitate epidemiological investigations of a foodborne hazard or illness outbreak, the ON-OICC assesses what case-level information is required and determines which Partner is best able to gather the identified information and has the authority to do so. Every effort is made to standardize the collected information (e.g., questionnaires and line lists). A review and update of the documents required takes place on an ongoing basis.

PHO provides CFIA and/or the appropriate food authority with a line list of possible or suspect foods that may be linked to the foodborne hazard or illness outbreak. A discussion then takes place as part of the ON-OICC to identify which food(s) to potentially investigate, based on all available information. CFIA and/or the appropriate food authority may then decide to exercise its authority to carry out a food safety investigation.

Case investigations are carried out by the BOH(s) and may be re-interviewed centrally by PHO. In multi-jurisdictional Ontario outbreaks, the coordination of epidemiological data may take place by PHO as the ON-OICC Lead. This analysis supports the examination of findings from all aspects of the outbreak investigation and this information is shared as described in [Section 8.4.7](#).

8.5.2. Food Safety Investigations

When the source of an outbreak is suspected to be food, a food safety investigation is conducted to determine whether the food is responsible for the illness outbreak or injuries. Further, efforts are made to identify the root cause of the contamination in the affected food.

CFIA and/or the appropriate food safety authority coordinates food safety investigations, which may include obtaining exposure histories for the identification of the food item, requesting a HC HRA, trace-back and trace-forward of the food product, and investigation of the food premises.

Multiple Partners may be involved in the food safety investigation. The roles and responsibilities of each Partner during the investigation are outlined above and in the Food Outbreak and Recall Committee's (FORC) *Food Premises Plant Investigation in a Foodborne Outbreak Investigation and/or Food Recall*. Food premises may be investigated by Partners with the respective legal authority. If the food is produced or manufactured in a facility that received a license or registration from the province or regional/local authority the Partner who has jurisdiction may conduct the food safety investigation. Assistance may be requested from regulatory Partners. During joint inspections, inspectors should discuss in advance who leads the joint inspection, who handles specific aspects of the inspection, and who asks questions of the operator.

Should the food safety investigation expand to include situations of employee health, the Ministry notifies the Ministry of Labour, Immigration, Training and Skills Development (MLITSD). Where employee records of illness and/or employee clinical test results are required, PHO notifies the BOH, who conducts any required follow-up of human illness.

8.5.3. Laboratory Investigations

Both epidemiological and food safety investigations usually involve laboratory testing. Each Partner is responsible for conducting the appropriate laboratory analyses as part of their respective investigations and mandates. The ON-OICC coordinates laboratory analyses in order to identify the most appropriate tests to be done, avoid overlap and duplication, permit discussion of situations, and share the results.

PHO and CFIA conduct the testing of food-related samples, including food samples that are being tested for toxin contamination.

For clinical specimens, depending on the suspect health hazard, the [Ministry](#), [PHO](#) or OPC can assist to identify an appropriate lab.

[Toxicovigilance Canada](#)²⁰ can be used as a resource for toxin-related inquiries. If Partners require assistance with determining which lab can test unusual toxin specimens, OPC should be the first point of contact.

If a Partner does not have the necessary capacity or expertise to perform the requested test(s), the Partner contacts the appropriate supporting laboratories as per [Annex 1](#), to arrange sample testing at a laboratory with the required expertise and capacity.

8.6. Centralized Integrated Analysis

When Partners are providing information and analysis from various sources (e.g., epidemiological, laboratory, food-related), centralized collation and analysis of data by the ON-OICC Lead is required to inform decision-making and draw conclusions based on all the available data. Findings from the epidemiological, laboratory, and food safety investigations is shared by and with Partners and integrated by the ON-OICC Lead to identify the potential cause and source of the foodborne hazard or illness outbreak, and areas requiring further investigation.

8.7. Health Risk Assessment (HRA)

HC is mandated to provide HRAs on hazards associated with food safety investigations/incidents. HRAs may be requested by CFIA (OFSR) or any other Partner during a coordinated outbreak investigation to inform risk mitigation activities. HRAs can be requested when a food safety standard, guideline, and/or policy pertaining to a specific situation has not been established by Health Canada. Time frames for receiving results for HRAs are as follows: *Health Risk I* - within 8 hours; *Health Risk II* - within 24 hours.

In foodborne hazard or illness outbreaks, HC uses the approach described in the "[Weight of Evidence: Factors to Consider for Appropriate and Timely Action in Foodborne Illness Outbreak Investigations](#)".²¹ Information arising from the various coordinated investigations, outlined in [Section 8.5](#) (Coordinated Investigations), is used to further inform the streams of evidence assessed in the weight of evidence approach. The evidence gathered is analyzed and a weight given to the various factors that contribute to each of the three streams of evidence (i.e., epidemiological evidence, food safety investigation and microbiological evidence). The weight of evidence approach is then used by HC to

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determine if a level of health risk can be assigned to a food and initiate the HRA process, if appropriate. Roles/responsibilities for gathering evidence and preparing HRA documentation in ON-OICC-coordinated investigations are established by the ON-OICC.

The HC HRA process follows the guidelines developed by the *Codex Alimentarius Commission* (Food and Agriculture Organization/World Health Organization, 1999), which is responsible for developing international food standards and guidelines.

All ON-OICC Partners are informed by the ON-OICC Lead once an HRA has been initiated by HC. ON-OICC Partners identify after-hours contacts, for use in the event that HRA results are completed after regular business hours (Annex 4). HC conveys the HRA results and rationale to Partners. The results of the HRA are sent to CFIA, who determines whether requesting a food recall is the appropriate risk mitigation action for food that is in distribution. If required, CFIA issues a public warning (known as a Food Recall Warning). CFIA will share key pieces of information that would appear in the draft Food Recall Warning with the ON-OICC lead, including the after-hours contacts as needed. The ON-OICC Lead will share the draft Food Recall Warning with ON-OICC Partners. If after-hours contacts have not been identified, CFIA contacts the Ministry after-hours Health Care Provider Hotline (1-866-212-2272), a 24-hour telephone line staffed for emergencies, with contact numbers for on-call Ministry and PHO staff. The Ministry after-hours service notifies appropriate Partners as per existing agreements.

The outputs are shared and discussed by HC at the ON-OICC to facilitate its coordination role.

It is recognized that public health (e.g., BOHs, PHO, the Ministry) assesses the health risk based on available information, to inform possible actions to prevent the spread of a foodborne illness outbreak or to limit a food hazard, in addition to or in parallel to HC's HRA. In certain circumstances, public health actions may be warranted where there is a lack of confirmed laboratory test results or if a food recall was not issued, but the risk of human exposure to a potential source of illness may be high.

8.8. Public Health and Food Safety Actions

Actions undertaken during a foodborne hazard or illness outbreak to address the source of the outbreak and prevent further cases of human illness or injury may include a wide range of activities by one or more Partners. Examples include:

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- Inspection, closure, sanitation, and review of practices at implicated premises;
- Recalling, detaining, or disposing of contaminated foods;
- Public communication outlining recommended prevention and control activities;
- Case and contact management; and
- Provision of prophylaxis (e.g., vaccination for Hepatitis A contacts) or treatment (e.g., botulism anti-toxin) through the NESS

Each Partner conducts the necessary mitigation actions under its respective mandate. The ON-OICC coordinates information-sharing related to these actions and facilitates discussions concerning the timing of actions.

8.8.1. Food Recalls

CFIA is responsible for the enforcement of the [Safe Food for Canadians Act](#)¹⁶ and the [Food and Drugs Act](#)¹⁷ as it relates to food. When a health risk has been established by HC through an HRA, the CFIA determines the most appropriate risk mitigation action, including whether to request a recall of a product.

8.8.1.1 CFIA Notification to all Partners

CFIA notifies Partners of Food Recall Warnings as described in [Section 8.7](#). Partners can be notified immediately when a Class I or Class II food recall has been requested and a public warning has been issued by subscribing to CFIA's email notification system or Food Recalls/Allergy Alerts system. Partners must subscribe to the "Recalls and safety alerts" e-mail notification system to receive these notices, at: <https://recalls-rappels.canada.ca/en/subscribe>.

8.8.1.2 CFIA Assistance Request to the Ministry

The CFIA Ontario Area Recall Coordinator (OntARC) may request assistance from the BOH through the Ministry (e.g., recall effectiveness checks). The Ministry advises the local Medical Officers of Health (MOHs) and other affected branches of the Ministry of the recall and/or the assistance requested.

8.8.1.3 Ministry Notification to all Partners

In the case of a public health or food safety action initiated by a BOH or the ministry, as directed by the local MOH or CMOH, the Ministry notifies the appropriate Partners. The Ministry may request the assistance of other Partners, as necessary to support public health actions.

8.9. Tampering, Sabotage, and Terrorism

In the event that a foodborne hazard or illness outbreak investigation identifies or suspects the intentional contamination of a food product, the appropriate local police/regional law enforcement agency shall be immediately notified by the local PHU. The PHU should also contact the Health System Emergency Management Branch (HSEMB) via the Health Care Provider Hotline (1-866-212-2272) or at eocooperations.moh@ontario.ca to notify them of the situation. If applicable, the HSEMB will coordinate a situational awareness call with all Partners, including and as appropriate, local, provincial, federal law enforcement. Federal Partners (i.e., CFIA, HC, and PHAC) must contact OMAFRA for situations involving suspected or confirmed terrorism related to animal health in Ontario.

If another ministry of the Ontario government becomes aware of a situation regarding the intentional contamination of a food product first, they should contact the PEOC 24/7 Duty Officer (1-866-314-0472 / peocdo01@ontario.ca) and the PEOC Duty Officer will contact other applicable ministries.

The PEOC determines whether the Provincial Emergency Response Plan for Terrorism should be activated in response to the terrorist threat (as defined in the Plan), and whether it is necessary for the PEOC to coordinate a provincial response. The PEOC, CFIA, and/or HC will contact Public Safety Canada (PSC), who then informs the appropriate federal governments and laboratories.

Following notifications to the appropriate authorities, the ON-OICC will continue to coordinate the outbreak investigation, taking into account any guidance/direction from law enforcement authorities who may conduct a criminal investigation.

In an emergency, if there is a need for products that are not contained in local supply chains or in the provincial stockpile, the Ministry of Health may contact PHAC to request access to the National Emergency Strategic Stockpile (NESS). This may include personal protective equipment (PPE), critical supplies and equipment (CSE), and medical countermeasures for certain biological treatments. For access to products in the provincial stockpile or to request assistance from the NESS, CMOH approval must be granted. Please see below for more information on requesting assistance.

Urgent Requests for Assistance

If a local health care provider or PHU identified the need for access to products from the provincial stockpile or the NESS, they should contact the HSEMB at the Health Care Provider Hotline at 1-(866)-212-2272 or via EOCoperations.MOH@ontario.ca.

The local health care provider or PHU should identify details around which product(s) and quantities are required and provide information on the timeline.

8.10. Communication with the Public

In the event of a foodborne hazard and illness outbreak, there may be a need to provide information and regular updates to the media, public, and other stakeholders in order to protect the health of Ontarians.

8.10.1. Public Communications Principles

Public communication activities are guided by the following principles:

- Communication as a priority where there is the opportunity to protect health by providing the public with information that helps them protect themselves and/or others;
- Considering the public's and stakeholder information needs, preferences, and requirements as part of the decision-making process;
- Being open, transparent, consistent, empathetic, and timely unless there is a valid reason to withhold information;
- Where possible, basing communication strategies and tactics on natural and social science; and
- Information shared effectively clarifies the situation, acknowledges uncertainties, provides advice, and explains what may happen next.

Communications are coordinated among all Partners and supports surge capacity and after-hours availability of communications/media relations staff. If requested by any Partner, the ON-OICC evaluates communications activities, to assess effectiveness.

8.10.2. Responsibility

Partners all have a responsibility to communicate with the public within its respective jurisdiction and to designate a spokesperson when an outbreak investigation has been initiated. The objective is to coordinate, where appropriate, public communications to

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ensure consistency of messaging (thereby building public trust) and to broaden the message reach.

The organizational lead for public communications depends on the situation involving the foodborne hazard or illness outbreak. If the outbreak is occurring within one BOH, the implicated BOH leads the public communication on human illnesses or injuries associated with the outbreak and recommends public health actions. In this situation, the government authority handling the recall or other control measures leads the food recall communications.

In a multi-jurisdictional outbreak involving more than one BOH in Ontario, public communication related to human illnesses or injuries and public health actions are led by the Ministry and food recall communications are led by CFIA.

In an outbreak that involves conveyances (e.g., trains, buses, airlines), public communications related to human illnesses or injuries and public health actions are led by PHAC (Public Health Notices); food recalls are led by CFIA; and general public education related to safe food handling are led by HC.

Table 1 defines what Partners lead communication activities during foodborne hazard or illness outbreaks that are restricted to a single BOH, multi-jurisdictional, and conveyances within Ontario.

Table 1: Responsibilities for public communications for foodborne hazard or illness outbreaks.

Situation	Primary Responsible Partner	
	Public Health Actions	Food Recall
Within one BOH	Affected BOH	CFIA, the Ministry, affected BOH
More than one BOH	The Ministry	CFIA, the Ministry, affected BOHs
Conveyances (trains, buses, airlines, cruise ships and cargo vessels in international waters)	PHAC	CFIA

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All involved Partners have a responsibility to coordinate communication activities in a consistent and timely way. In instances when communications coordination is required, communications representatives may be involved to guide the process and assess the need, content, timing, and appropriate activities for communicating the outbreak.

In certain events and unforeseen situations, it may not be possible to coordinate all efforts for public communications and a Partner may choose to provide public communication independently with respect to their individual expertise and legislative responsibilities that was not previously agreed upon or discussed within the ON-OICC. In this situation, the Partner should advise partners of the ON-OICC of the communication and share draft messaging prior to releasing the public communication. In the case of public advisories that are issued late at night or early in the morning, messaging is shared as soon as reasonably possible. This Partner is also responsible for addressing any calls from the public or media regarding their public messaging. However, Partners are aware that the information shared with the public is limited to their own information and must not include information shared by or belonging to another Partner unless there is specific consent to do so. Public messaging must always respect the confidentiality of information shared within the ON-OICC, as outlined in [Section 8.4.7](#) of this document. ESDs and Monitored Situations, as well as Public Health Alerts posted on CNPHI are mechanisms to communicate with BOHs regarding outbreaks and emerging events.

Communication to health professionals may also be required as part of the response to an Ontario multi-jurisdictional foodborne hazard or illness outbreak. Distribution of communication products to health professionals remains the responsibility of the Ministry and BOHs.

8.11. ON-OICC Deactivation and Outbreak Conclusion

The ON-OICC Lead collates evidence (e.g., number of cases returning to baseline; consideration of reporting delays and timing of public health action) and proposes to deactivate the ON-OICC. The ON-OICC reviews the status of the foodborne hazard or illness outbreak and comes to a consensus on the ON-OICC deactivation. The date the outbreak is declared over may not coincide with the date of ON-OICC deactivation; the ON-OICC may be deactivated prior to the outbreak being declared over if coordination among Partners is no longer required.

The ON-OICC Lead prepares and circulates an ON-OICC response summary or final report

that chronicles key events and findings from the outbreak investigation. Partners review the draft document and submit their revisions and or comments before a final version is circulated to them.

8.12. Post-ON-OICC Debrief

Post-ON-OICC debriefs may be conducted at the request of the ON-OICC Lead or any Partners involved. For a large outbreak involving multiple Partners, a formal debriefing meeting is recommended and is organized by the ON-OICC Lead in a timely manner after the resolution of the foodborne hazard or illness outbreak to benefit from the lessons learned. The ON-OICC Lead chairs the post-ON-OICC debrief unless otherwise agreed upon by Partners.

The goals of the post-ON-OICC debrief includes, but are not limited to:

- Confirmation of the source of the foodborne hazard or illness outbreak;
- Assessment of the effectiveness of outbreak control measures and any difficulties met in their implementation;
- Identification of the short- and long-term measures to prevent reoccurrence, such as new or revised policies or standards (e.g., root cause(s));
- Evaluation of the collaborative response efforts, including notification, communication and coordination between jurisdictions;
- Identification of resources, structural changes, or training needs to optimize future responses;
- Identification of the necessary improvements or adjustments to the ON-FIORP. Any recommendations for the purpose of updating the ON-FIORP should be provided to the Ministry. Changes are only made with the agreement of all Partners;
- Discussion of any privacy and/or legal situations which may have arisen; and
- Assessment of a need for further scientific studies.

If a debrief is held, it is the ON-OICC Lead's responsibility to provide a debrief summary report to all other Partners. The ON-OICC Partners may further distribute the report to other officials within their organizations who may benefit from the information.

9. Emergency Operations Centre (EOC) Activation

Most foodborne hazard and illness outbreak investigations do not require the activation of emergency operations centres (EOCs). However, Partners may consider using such an approach for some public health emergencies, including foodborne hazard and illness outbreaks, to help coordinate their resources and response. Partners are responsible for notifying other Partners of their intent to activate their EOCs. Information from the ON-OICC is to be integrated into the EOCs.

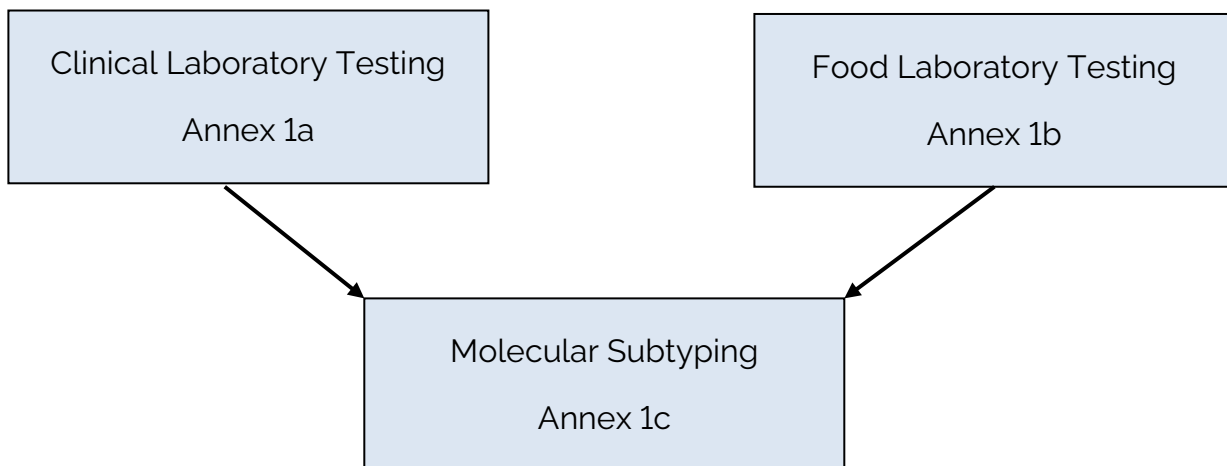
10. Administrative Review

The Ministry is responsible for reviewing and updating the ON-FIORP with the agreement of all Partners, as needed. The review is conducted periodically as required, or at the request of one of Partners, to ensure the accuracy of organizational names, roles and responsibilities, and to assess the recommendations received through the post-outbreak debriefs. PHO updates the ON-FIORP Contact List on a regular basis.

Annex 1: Laboratory Testing for Foodborne Hazards and Illness Outbreak Investigations in Ontario

Laboratory testing for foodborne pathogens and toxins is performed routinely in Ontario for clinical diagnosis, surveillance, and food complaints. The laboratories in Ontario performing this testing, the testing menu, and sample flow are described in this section. See below for contact information of laboratory support during foodborne illness outbreaks (Table 2).

- If a microbial pathogen (or its associated toxin) is suspected, PHO should assist in conducting testing or determining which labs can conduct testing of clinical samples, while PHO, CFIA, HC and OPC could assist in conducting testing or determining which labs can conduct testing of food samples depending on the setting and test requested.
- If botulism is suspected, HCs BRS should assist in conducting testing.
- If an unusual toxin is suspected, the OPC, the Ministry and PHO should assist in determining which labs can conduct clinical toxin testing.



Early communication with the laboratories during foodborne illness outbreak investigations is critical to ensuring adequate test selection, sample collection, and information sharing is achieved to optimize testing turnaround time and avoid potential delays.

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Critical to the success of foodborne hazards and illness outbreak investigations is the ability to rapidly communicate and integrate laboratory results to ON-OICC from all testing laboratories. Standardization of sample collection, accompanying sample information and the use of compatible testing methodologies is of paramount importance.

Table 2: Laboratory Contact Information During Foodborne Illness Outbreak Investigations.

Human specimens	Food specimens
<p>PHO Laboratory customer service: 416-235-6556 or 1-877-604-4567 customerservicecentre@oahpp.ca</p> <p>Botulism Reference Service (HC): 613-296-1139 (consultation) or 613-957-0885 (laboratory)</p> <p>Ontario Poison Centre: 1-(800)-268-9017 416-813-5900</p>	<p>PHO Laboratory customer service: 416-235-6556 or 1-877-604-4567 customerservicecentre@oahpp.ca</p> <p>Botulism Reference Service (HC): 613-296-1139 (consultation) or 613-957-0885 (laboratory)</p>
	<p>CFIA: 416-665-5049 E-mail: cfia.ontarearecall-rappels.acia@canada.ca;</p>
<p>Ministry of Health: 1-866-212-2272 E-mail: idpp@ontario.ca</p>	<p>Ministry of Health: 1-866-212-2272 E-mail: idpp@ontario.ca</p>

Annex 1a: Laboratory Testing of Clinical Samples

In non-outbreak settings, primary testing of human clinical specimens is generally performed at private and hospital laboratories in Ontario. All cultured isolates of *Salmonella*, *Shigella*, Shiga toxin-producing *Escherichia coli* and *Listeria monocytogenes* are requested to be routinely sent from the original testing laboratory to PHO for surveillance-based molecular subtyping through the PulseNet program (Figure 2). Similarly, all specimens from individuals positive with Hepatitis A IgM or *Cyclospora* species should be routinely sent from the original testing laboratory to PHO for surveillance-based molecular subtyping. PHO also supports routine testing of clinical specimens from inpatient and institutional settings for gastrointestinal viruses, as well as routine testing of clinical specimens from all settings for gastrointestinal parasites. For full details of laboratories performing clinical testing of foodborne pathogens, see Table 3.

During foodborne outbreak investigations, clinical specimens can be sent directly to PHOL to ensure expedited testing of microbiological pathogens as well as *Clostridium perfringens* enterotoxin when needed. Upon request, cultured isolates from some pathogens (e.g., *Campylobacter*, *Vibrio*) tested at other labs may be sent to PHO for molecular subtyping. If in doubt, contact PHO's laboratory customer service. See Table 2 for detailed instructions for clinical testing.

If Botulism is suspected, samples should be sent directly to the BRS (HC) after contacting 613-269-1139 (consultation) or 613-957-0885 (lab).

If an unusual/chemical toxin is suspected, aliquots of all blood and urine samples taken from a patient should be kept upon admission by the hospital while discussion with OPC takes place regarding appropriate testing pathways for these samples.

For full details of labs performing clinical testing of foodborne pathogens, see Table 3.

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Table 3: Testing laboratories for foodborne pathogens in clinical specimens in Ontario. Note: During an outbreak stool specimens can be sent by health units directly to PHO Laboratory for expedited testing.

Community and Hospital Laboratories	Public Health Ontario's Laboratory	National Microbiology Laboratory (PHAC) and Health Canada	Ontario Poison Centre (OPC)- Toxin Testing
<p>Routine stool microbiology testing.</p> <p>Specimens submitted from front line clinicians.</p> <p>Contact OPC for toxin-related questions or events.</p>	<p>Primary environmental and clinical testing during outbreaks.</p> <p>Confirmatory and reference testing.</p> <p>Specimens submitted from community and hospital laboratories and Public Health Inspectors.</p>	<p>Reference and specialized testing.</p> <p>Specimens submitted from Provincial Health Laboratories.</p> <p>Samples for <i>Clostridium botulinum</i> testing can be sent directly to Health Canada.</p>	<p>OPC is primary point of contact should an unusual toxin be suspected.</p> <p>There are several labs across Ontario that can perform toxin testing depending on the toxin.</p> <p>OPC, Ministry of Health and PHO can assist in identifying an appropriate lab for toxin testing.</p>

All *Salmonella*, *Shigella*, Shiga toxin-producing *E. coli* and *Listeria monocytogenes* are requested to be sent to PHO Laboratory for confirmation, reference testing and molecular subtyping.

Table 4: Testing services for clinical samples in Ontario.

Laboratory	Primary function	Testing available	Additional notes
Community and hospital laboratories	Routine clinical testing of foodborne pathogens from primary specimens. Forwarding of positive samples to PHO.	Consult the local laboratory for testing availability details.	If a specimen is positive for <i>Salmonella</i> , Shigella, Shiga toxin-producing <i>E. coli</i> , <i>Listeria monocytogenes</i> , <i>Cyclospora</i> , or Hepatitis A IgM, the laboratory must send the cultured isolate (or primary specimen for <i>Cyclospora</i> and Hepatitis A IgM) to PHO for surveillance-based molecular subtyping. Upon request, positive samples of other pathogens (e.g., <i>Campylobacter</i> , <i>Vibrio</i> , norovirus) tested at other laboratories may be sent to PHO as well for molecular subtyping.
PHO	Routine clinical testing of enteric viruses (including hepatitis A serology) and parasites from primary specimens. Outbreak testing of most foodborne pathogens (except <i>C. botulinum</i>) from primary specimens. Reference identification and molecular subtyping of foodborne pathogens from positive samples. Forwarding of positive samples to NML for additional reference identification and molecular subtyping as needed.	Includes most foodborne pathogens, except <i>C. botulinum</i> . Refer to PHOs Test Information Index²² for a listing of available tests:	If testing is related to an outbreak investigation, contact PHO Laboratory customer service: 416-235-6556 or 1-877-604-4567 to facilitate expedited testing.

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Laboratory	Primary function	Testing available	Additional notes
NML	Additional reference identification and molecular subtyping of foodborne pathogens from positive samples forwarded by PHO.	Includes most foodborne pathogens except <i>C. botulinum</i> . Refer to PHOs Test Information Index²² for a listing of available tests. PHO Laboratory.	Samples are received and forwarded by PHO. If testing is related to an outbreak investigation, contact PHOs laboratory customer service at 416-235-6556 or 1-877-604-4567 to facilitate testing.
Botulism Reference Service (BRS) (HC)	Routine clinical testing of <i>C. Botulinum</i> from primary specimens.	Include <i>C. botulinum</i> and its associated toxin. Refer to the Botulism-Guide for Healthcare Professionals²³ for details.	Samples should be sent directly to the BRS instead of PHO after contacting 613-296-1139 (consultation) or 613-957-0885 (laboratory).
Ontario Poison Centre (OPC)	Primary point of contact if a specific, unusual, chemical toxin is suspected.	As a toxicology consultation service, OPC will assist in identifying a number of labs in Ontario that can perform testing on a case-by-case basis, depending on the suspected toxin.	Contact 416-813-5900 or 1-800-268-9017

Figure 2: Laboratory infrastructure for typing of bacterial foodborne pathogens.

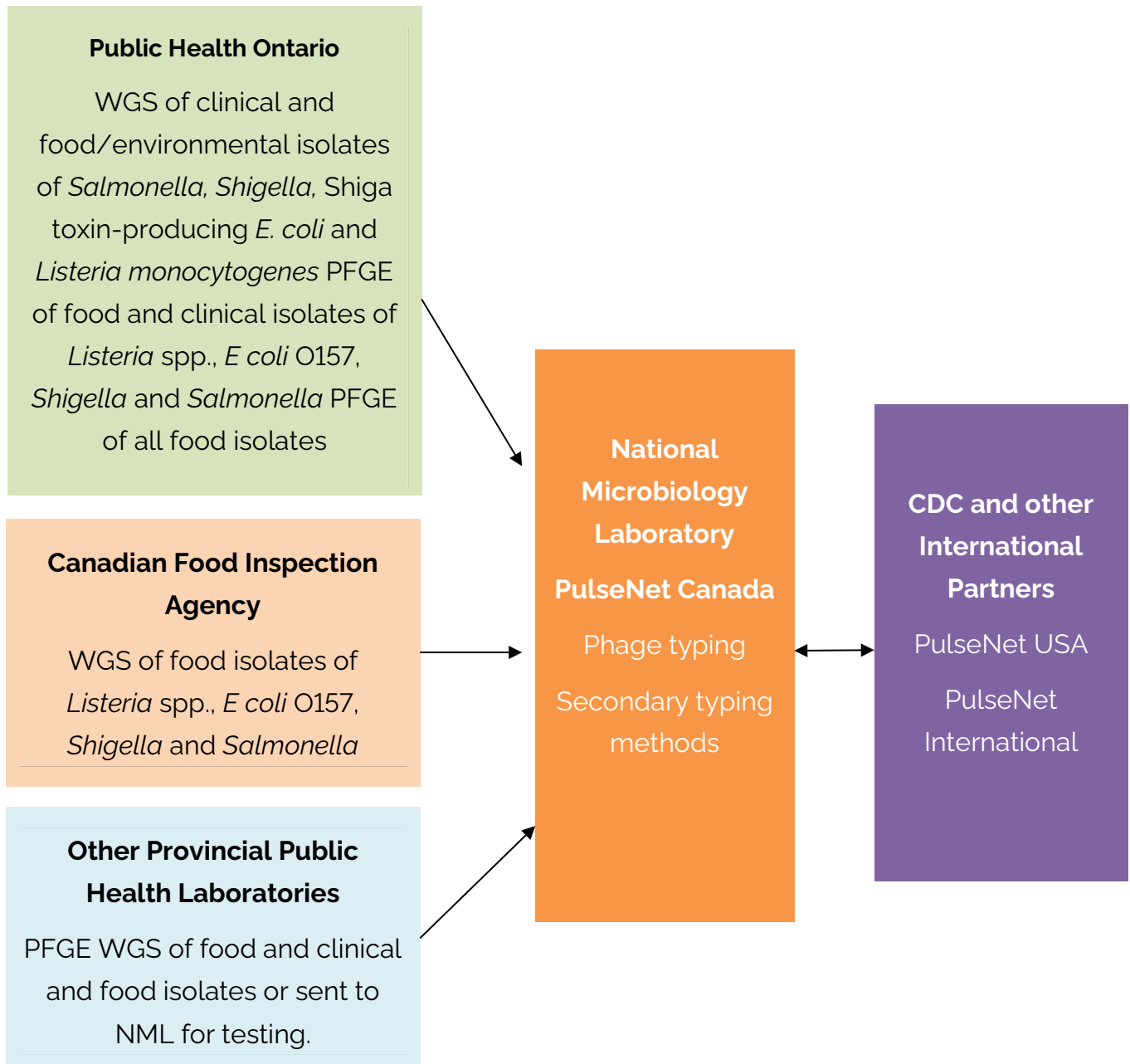


Table 5: Laboratories that perform typing for foodborne pathogens in Ontario.

Laboratory	Testing available
PHO Laboratory	WGS, common bacterial foodborne pathogens Member of PulseNet Canada N.B. If related to an outbreak investigation, contact PHO Laboratory customer service at 416-235-6556 or 1-877-604-4567 for assistance.
CFIA	WGS WGS for <i>E coli</i> O157, <i>Listeria</i> , <i>Salmonella</i> , and <i>Shigella</i> Member of PulseNet Canada
HC	<i>Listeria</i> WGS Norovirus subtyping Member of PulseNet Canada
NML	PulseNet Canada Hepatitis A virus typing (genotype and RNA sequencing) Secondary typing methods for bacterial pathogens

Annex 1b: Laboratory Testing of Food and Environmental Samples

This section outlines the laboratories that suspect food should be sent to for testing during an outbreak investigation.

Detailed information of food samples submitted for testing enables the rapid and accurate mitigation of a food hazard once there is evidence that a food product is contaminated.

The following information should be collected when available:

- Photos of all sides of the packaging or photocopy of the product label facilitates this data gathering process
- Brand name
- Common name
- Unit size (e.g., 50g, 125 ml)
- Lot number(s)
- Best before date/Expiry date/Use by date/Durable life date
- Packed on date/Manufacturing date
- Universal product code (UPC)
- Name of Manufacturer/Importer/Legal Agent (if available on the packaging)
- Label claims/preparation or serving instructions
- Container type (e.g., vacuum pack, plastic rigid container)
- Shelf life of product (if possible)
- Where the sample was taken (e.g., at the suspect place of eating, case's home)
- Storage information (e.g., frozen, refrigerated, non- refrigerated)
- Indicate if this is an opened or closed (i.e.: intact) sample
- Indicate the number of samples/sub-samples taken

In the investigation of a potential food or environmental source during outbreak investigations, public health inspectors can send suspected food and environmental samples to PHO for testing for bacterial pathogens. Detailed information about sample collection, requisition requirements, and transportation of samples to be tested at the PHO Laboratory are available in the Public Health Inspector's (PHI) [Guide to Environmental Laboratory Testing](#).²⁴

Food testing is also available at CFIA laboratories and may be considered for referral by PHO in certain situations, or when there is a need for additional testing capability or capacity (e.g., for non-bacterial pathogens). For further information, contact the CFIA through the ARC (Table 5). The recommended flow of food samples to laboratories for testing during foodborne hazard or illness investigations is presented (Figure 4).

Table 6: Testing services for food and environmental samples in Ontario

Service	Primary Function	Testing available	Additional notes
PHO	<p>Testing of most foodborne bacterial pathogens (except <i>C. botulinum</i>) from food or environmental samples.</p> <p>Reference identification and molecular subtyping of foodborne pathogens from positive samples tested at their laboratory.</p> <p>Forwarding of positive samples to NML for additional reference identification and molecular subtyping as needed.</p>	<p>Includes most foodborne pathogens, except <i>C. botulinum</i>. Refer to PHOs Test Information Index²² and the PHIs Guide²⁴ for more information.</p>	<p>If testing is related to an outbreak investigation, contact PHOs laboratory customer service at 416-235-6556 or 1-877-604-4567 to facilitate expedited testing.</p> <p>Consultation with the microbiologist is required for requests that fall outside of the scope of the PHO laboratory test menu.</p>
CFIA	<p>Offer support to PHO for food testing services not available at PHO if required.</p> <p>Reference molecular subtyping of foodborne pathogens from positive samples tested at their laboratory.</p>	<p>Includes most foodborne pathogens, except <i>C. botulinum</i>. Refer to the PHIs Guide²⁴ for more information.</p>	<p>For further information, contact the CFIA through the ARC. Additional information such as commercial product details, reason for test request, clinical implications, and priority level will be required by CFIA for the test referral.</p> <p>E-mail: cfia.ontarearecall-rappels.acia@canada.ca</p> <p>Tel: 416-665-5049</p>

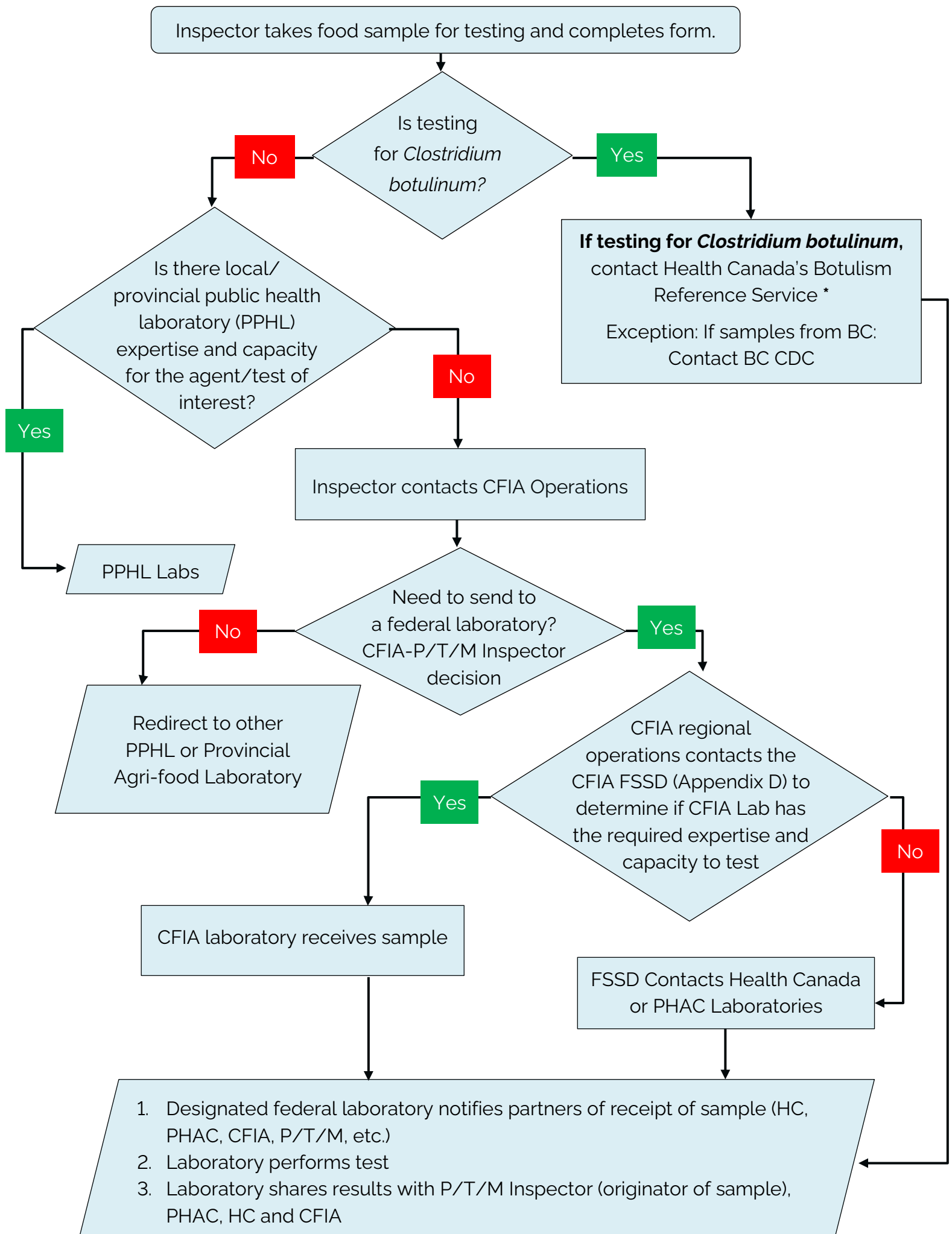
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Service	Primary Function	Testing available	Additional notes
NML	Additional reference identification and molecular subtyping of foodborne pathogens from positive samples forwarded by PHO or CFIA.	Includes most foodborne pathogens, except <i>C. botulinum</i> . Refer to PHO's Test Information Index ²² for a listing of available tests.	Samples are received and forwarded by PHO or CFIA. If testing is related to an outbreak investigation, contact PHOs laboratory customer service at 416-235-6556 or 1-877-604-4567 to facilitate testing.
BRS (HC)	Testing of <i>C. botulinum</i> from food samples	Include <i>C. botulinum</i> and its associated toxin. Refer to the Botulism – Guide for Healthcare Professionals ²³ for details.	Samples should be sent directly to the Botulism Reference Service instead of PHO after contacting 613-296-1139 (consultation) or 613-957-0885 (laboratory)
Listeria Reference Service (HC)	Additional reference identification and molecular subtyping of <i>Listeria monocytogenes</i> from positive samples forwarded by PHO's laboratory or CFIA.	<i>Listeria monocytogenes</i>	Samples are received and forwarded by PHO or CFIA.
Food Virology Reference Service (HC)	Additional reference identification and molecular subtyping of foodborne viruses from positive samples forwarded by PHO or CFIA.	Foodborne viruses	Samples are received and forwarded by PHO or CFIA.
MECP	Offers laboratory testing support for MECP drinking water inspectors and PHO in the event of a waterborne outbreak.		

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Service	Primary Function	Testing available	Additional notes
University of Guelph Laboratories	Laboratory testing in support OMAFRA's food inspection programs under the terms of the Ontario Agri-Food Innovation Alliance 2018-2028.		
OPC	Primary point of contact if a specific, unusual, chemical toxin is suspected.	As a toxicology consultation service, OPC will assist in identifying labs in Ontario that can perform testing on a case-by-case basis depending on the suspected toxin.	Contact 416-813-5900 or 1-800-268-9017 for assistance.

Figure 3: Process diagram for directing food samples during epidemiological/public health/food safety investigations to the federal laboratory network. (From the Standard Operating Procedure for Directing Food Samples Collected during epidemiological/Public Health/Food Safety Investigations to the Federal Laboratory Network, FIORP, ANNEX 13).



Annex 1c: Subtyping of Foodborne Pathogens

Subtyping or “fingerprinting” of foodborne pathogens, such as pulsed-field gel electrophoresis (PFGE), targeted gene sequencing, or whole genome sequencing (WGS), is available at a variety of laboratories for routine surveillance and to assist in outbreak investigations.

Molecular subtyping of clinical *Salmonella*, *Shigella*, Shiga toxin-producing *E. coli*, and *Listeria monocytogenes* isolates is performed routinely by PHO's laboratory and NML as part of the PulseNet Canada WGS surveillance and outbreak investigation program. All laboratories in Ontario should routinely forward their cultured isolates with these organisms to PHO to facilitate subtyping.

Molecular subtyping of food and environmental *Salmonella*, *Shigella*, Shiga toxin-producing *E. coli* and *Listeria monocytogenes* isolates is performed by PHO or the CFIA (depending on where the isolate was originally identified) as part of the PulseNet Canada WGS program.

WGS data from PHO, CFIA, NML, and other P/T PulseNet members is compiled by NML on a weekly basis, at which point a PulseNet Canada cluster designation is assigned to isolates that have comparable genome sequences implying relatedness. NML's PulseNet Canada group collaborates as needed with other global PulseNet groups such as PulseNet USA and PulseNet International when outbreak investigations involve jurisdictions outside of Canada.

Subtyping of clinical specimens positive for Hepatitis A virus and *Cyclospora* is performed routinely at NML. All laboratories in Ontario should routinely forward their specimens positive with these organisms to PHO to facility forwarding to NML for subtyping.

Subtyping of clinical specimens positive for other foodborne pathogens (e.g., *Campylobacter*, *Vibrio*, norovirus) is available upon request at NML. Subtyping of food samples positive for norovirus is available at HC's Virology Reference Service laboratories.

Table 7: Laboratories that perform typing for foodborne pathogens in Ontario.

Laboratory	Testing available
PHO Laboratory	WGS, common bacterial foodborne pathogens. Member of PulseNet Canada N.B. If related to an outbreak investigation, contact PHO Laboratory customer service at 416-235-6556 or 1-877-604-4567 for assistance.
CFIA	WGS for <i>E. coli</i> O157, <i>Listeria</i> , <i>Salmonella</i> , and <i>Shigella</i> Member of PulseNet Canada
HC	<i>Listeria</i> WGS Norovirus subtyping Member of PulseNet Canada
NML	PulseNet Canada Hepatitis A virus typing (genotype and RNA sequencing) Secondary typing methods for bacterial pathogens

Annex 2: Post-Exposure Prophylaxis During Multi-Jurisdictional Hepatitis A Illness Outbreaks

Hepatitis A virus (HAV) is the only foodborne illness that has post-exposure prophylaxis/vaccine (PEP) available and consequently the public health response and management of multi-jurisdictional HAV outbreaks is unique. The roles and responsibilities of the various stakeholders and a procedure for stakeholder collaboration is described for this unique situation and are complimentary to those outlined in the ON-FIORP.

Where PEP is Warranted

Non-immune contacts of a HAV cases should receive PEP as soon as possible, and ideally, within 14 days after exposure to a HAV case or exposure to HAV-contaminated food. One dose of publicly funded HAV vaccine can be given to eligible contacts.

PEP should ideally be considered in the following situations:

1. An outbreak investigation of HAV infection in Ontario identifies a food item distributed in Ontario as the source of the outbreak. The food item is recalled from the Ontario marketplace.
2. HAV has been detected in a food item with distribution to more than one jurisdiction in Ontario.
 - a. The food item is recalled from the Ontario marketplace; or
 - b. There is no outbreak investigation or illness, and there is no product recall at the time of notification.

Stakeholder Roles and Responsibilities

Responsibility for the management of the multi-jurisdictional HAV outbreaks and food contamination situations may be shared amongst public health Partners and retail stakeholders.

Ministry of Health

The Ministry is responsible for determining the eligibility criteria for PEP and to ensure vaccine is available in Ontario. The Ministry supports the BOHs with logistics associated with the HAV PEP campaign, as appropriate.

Public Health Ontario

Under the ON-FIORP, PHO is responsible for coordinating multijurisdictional foodborne hazards or illness outbreaks within Ontario. PHO's role in the management of multi-jurisdictional HAV outbreaks and food contamination situations is to provide epidemiological and scientific support, and to coordinate and facilitate discussions between affected jurisdictions, the Ministry, and PHO.

Boards of Health

Affected BOHs assess the eligibility of offering PEP to potentially exposed contacts and are responsible for the delivery of PEP to the affected population including management of all associated logistics, such as securing an appropriate location(s), scheduling qualified staff to assess eligibility and administer the vaccine, and issuing public messaging to reach the target population within their jurisdiction. BOHs are responsible for getting approval and ordering of the doses from the Ministry.

Retail and Industry Stakeholders

Retail and industry involvement in the management of multi-jurisdictional HAV outbreaks and food contamination situations may occur. Retail and industry stakeholders have assisted by:

- Directly contacting customers who purchased the implicated product and notifying them of the issue, providing instruction about safe product disposal, and informing them of PEP availability.
- Privately purchasing and providing non-publicly funded PEP at retail locations.
- Hosting BOHs PEP clinics using publicly funded vaccine at retail locations.

Should a third party want to provide HAV vaccine that is not publicly funded (e.g., the retailer pays for the vaccine), the Ministry will be in contact with the affected retailer(s) or industry stakeholder(s) to discuss and ensure appropriate vaccination planning has occurred. The Ministry shares the outcome of the discussion with ON-OICC Partners.

Depending on the scope of the investigation and management of the situation, the affected third party may be invited to attend ON-OICC teleconferences to provide situational awareness regarding their activities.

Annex 3: Enteric Illness Outbreak Investigations Linked To Contact With Animals Or Animal Foods

The following definition is provided to establish a common understanding of the terms within this Annex:

Enteric zoonoses: a disease of the gastrointestinal tract caused by an infection resulting from the ingestion of a microorganism that is transmitted either directly or indirectly between humans and animals. Examples of zoonotic diseases that can be transmitted through ingestion include campylobacter, salmonella, VTEC, Yersinis and cryptosporidia.

This Annex provides additional information when multi-jurisdictional human enteric illness outbreak investigations are linked, or suspected to be linked, to animals or their foods.

Partners comprising the investigative team may be different depending on the situation.

Notification

Depending on the nature of the event, notification to animal health Partners (e.g., OMAFRA) who may not receive Public Health Alerts (CNPHI), should be considered.

OICC Activation

Notification for animal-related ON-OICC activations should be accompanied with a reminder to forward the notification to relevant Partners within their jurisdictions, which may vary from foodborne outbreaks.

Composition of the ON-OICC

An ON-OICC established to investigate animal-related outbreaks should be composed of representatives with the authority to make decisions related to technical and operational situations and have access to senior decision-makers for situations with policy implications. The composition of the ON-OICC depends on the nature of the outbreak.

Coordinated Investigations

For human enteric illness outbreak investigations linked, or suspected to be linked, to animals or their foods, PHO coordinates the ON-OICC, otherwise the Ministry coordinates the teleconference. Support for animal health-related investigations will be provided by the Ministry's Public Health Veterinarian, CFIA, and/or OMAFRA.

If the investigation becomes multi-provincial or territorial, the coordination of the investigation is transferred to PHAC as per routine process.

a) Epidemiological Investigations

The epidemiological investigation for animal-related outbreaks is conducted similar to foodborne outbreaks. Efforts are made to standardize the data collection early in the investigations, often with an animal-focused questionnaire specific to the situation.

b) Laboratory Investigations

The process for testing may differ for animal-related outbreaks, depending on the pathogen and/or animal. Capacity for testing animal health samples should be raised at ON-OICC meetings to ensure samples are sent to the appropriate laboratory with the required expertise and capacity. Interpretation of animal health results and how it relates to human health may also be discussed.

Annex 4: ON-FIORP Contact List

The ON-FIORP Contact List is maintained by PHO. Names and contact information of ON-FIORP Primary Representatives which are involved in the multi-Party coordination of foodborne hazard and illness outbreak response activities are provided. Upon notification by the ON-OICC Lead, the ON-FIORP Primary Representative is responsible for notifying and providing regular updates to their senior officials. The ON-FIORP Primary Representative ensures the appropriate representation from their respective organizations on the ON-OICC.

The ON-FIORP Contact List is updated regularly to ensure that it is accurate and current, and distributed electronically to Partners and BOH representatives involved with the implementation of the ON-FIORP. In addition to regular reviews, any changes to the contact names provided to the working group are made immediately and a new ON-FIORP Contact List is distributed to those named on the list.

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