Massachusetts Department of Public Health

Foodborne Illness Season is Here!

Enteric Case Investigation Reminders & Tips for Success

July 8, 2025

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Bureau of Infectious Disease & Laboratory Sciences

Overview

- Existing Resources
- LBOH Raw Milk Survey Reminder (*DPH Intern Samantha Swartz*)
- Seasonal Reminders
- Enteric Case Interviews
  - Why all the questions?
  - Best Practices
- Why Detailed Case Interviews Matter: Stories from an Epi
- Coming Soon: Overhaul of FBI Complaint Events

Existing Resources

Existing and still relevant resources in MAVEN Help

Recorded webinar presentations

- **Enteric disease overview**
  - Introduction to Enteric (Gastrointestinal Illness) Disease Case Investigations (May 2022) Slides, Recording
  - Enteric Gastrointestinal Illness Investigations 2023 Season Refresher (June 2023) Slides, Recording
    - WGS Clusters
  - Foodborne Illness Complaint Reporting and Enteric Case Investigation 2024 Season Refresher (July 2024)
    - Enteric modes of transmission, frequently asked questions

- **Disease-specific guidance/training**:
  - **Cyclospora** and **Vibrio** Case Investigations (June 2022) Slides, Recording
  - Overview and Updates to **Cryptosporidium** and **Shigella** Case Investigations (August 2022) Slides, Recording

- Noro-like Outbreaks in Non-Food Establishments: Key Steps for Local Health Investigators (November 2023) Slides, Recording
  More applicable to the winter

https://www.maven-help.maventrainingsite.com/

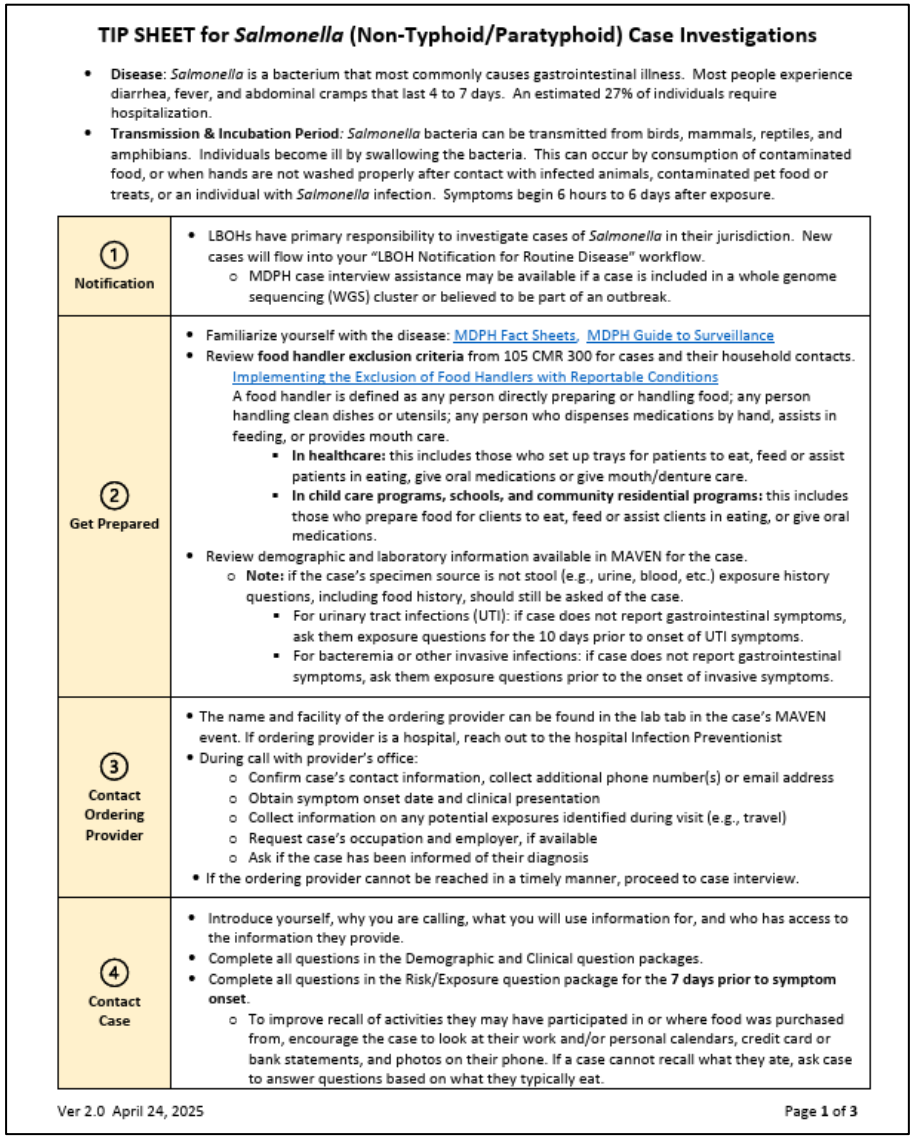
Tip Sheets Galore!

Tip sheets

- Implementing the Exclusion of Food Handlers with Reportable Conditions
- Creating Foodborne Illness Complaint Events
- Disease-specific with **NEW** additions: Campylobacter, Giardia, Norovirus, Salmonella, Shigella, Cryptosporidium, Cyclospora, Listeria, STEC, Vibrio, Yersinia

Other tools

- Interpreter services are still available to LBOHs through LanguageLine Solutions®
  - The phone number & access code for this service are as follows:
    - **DIAL: 866-874-3972**
    - **PROVIDE: 684959**



TIP SHEET for *Salmonella* (Non-Typhoid/Paratyphoid) Case Investigations

- **Disease**: *Salmonella* is a bacterium that most commonly causes gastrointestinal illness. Most people experience diarrhea, fever, and abdominal cramps that last 4 to 7 days. An estimated 27% of individuals require hospitalization.
- **Transmission & Incubation Period**: *Salmonella* bacteria can be transmitted from birds, mammals, reptiles, and amphibians. Individuals become ill by swallowing the bacteria. This can occur by consumption of contaminated food, or when hands are not washed properly after contact with infected animals, contaminated pet food or treats, or an individual with *Salmonella* infection. Symptoms begin 6 hours to 6 days after exposure.

① Notification	• LBOHs have primary responsibility to investigate cases of *Salmonella* in their jurisdiction. New cases will flow into your "LBOH Notification for Routine Disease" workflow. ○ MDPH case interview assistance may be available if a case is included in a whole genome sequencing (WGS) cluster or believed to be part of an outbreak.

② Get Prepared	• Familiarize yourself with the disease: MDPH Fact Sheets, MDPH Guide to Surveillance
	• Review **food handler exclusion criteria** from 105 CMR 300 for cases and their household contacts. Implementing the Exclusion of Food Handlers with Reportable Conditions
	A food handler is defined as any person directly preparing or handling food; any person handling clean dishes or utensils; any person who dispenses medications by hand, assists in feeding, or provides mouth care.
	  ▪ **In healthcare:** this includes those who set up trays for patients to eat, feed or assist patients in eating, give oral medications or give mouth/denture care.
	  ▪ **In child care programs, schools, and community residential programs:** this includes those who prepare food for clients to eat, feed or assist clients in eating, or give oral medications.
	• Review demographic and laboratory information available in MAVEN for the case.
	  ○ **Note:** if the case's specimen source is not stool (e.g., urine, blood, etc.) exposure history questions, including food history, should still be asked of the case.
	  ▪ For urinary tract infections (UTI): if case does not report gastrointestinal symptoms, ask them exposure questions for the 10 days prior to onset of UTI symptoms.
	  ▪ For bacteremia or other invasive infections: if case does not report gastrointestinal symptoms, ask them exposure questions prior to the onset of invasive symptoms.

③ Contact Ordering Provider	• The name and facility of the ordering provider can be found in the lab tab in the case's MAVEN event. If ordering provider is a hospital, reach out to the hospital Infection Preventionist
	• During call with provider's office:
	  ○ Confirm case's contact information, collect additional phone number(s) or email address
	  ○ Obtain symptom onset date and clinical presentation
	  ○ Collect information on any potential exposures identified during visit (e.g., travel)
	  ○ Request case's occupation and employer, if available
	  ○ Ask if the case has been informed of their diagnosis
	• If the ordering provider cannot be reached in a timely manner, proceed to case interview.

④ Contact Case	• Introduce yourself, why you are calling, what you will use information for, and who has access to the information they provide. • Complete all questions in the Demographic and Clinical question packages. • Complete all questions in the Risk/Exposure question package for the **7 days prior to symptom onset**. ○ To improve recall of activities they may have participated in or where food was purchased from, encourage the case to look at their work and/or personal calendars, credit card or bank statements, and photos on their phone. If a case cannot recall what they ate, ask case to answer questions based on what they typically eat.

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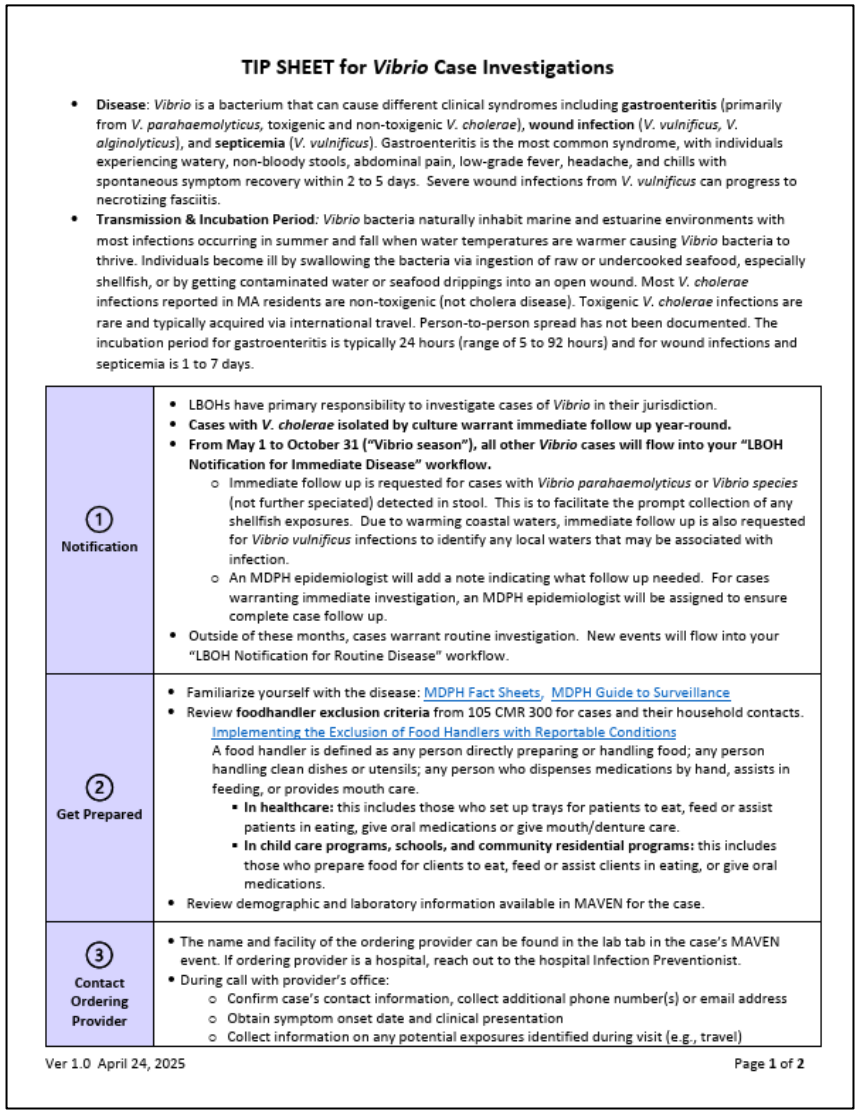
Tip Sheets for Enteric Case Investigations



TIP SHEET for *Vibrio* Case Investigations

- **Disease**: *Vibrio* is a bacterium that can cause different clinical syndromes including **gastroenteritis** (primarily from *V. parahaemolyticus,* toxigenic and non-toxigenic *V. cholerae*), **wound infection** (*V. vulnificus, V. alginolyticus*), and **septicemia** (*V. vulnificus*). Gastroenteritis is the most common syndrome, with individuals experiencing watery, non-bloody stools, abdominal pain, low-grade fever, headache, and chills with spontaneous symptom recovery within 2 to 5 days. Severe wound infections from *V. vulnificus* can progress to necrotizing fasciitis.
- **Transmission & Incubation Period**: *Vibrio* bacteria naturally inhabit marine and estuarine environments with most infections occurring in summer and fall when water temperatures are warmer causing *Vibrio* bacteria to thrive. Individuals become ill by swallowing the bacteria via ingestion of raw or undercooked seafood, especially shellfish, or by getting contaminated water or seafood drippings into an open wound. Most *V. cholerae* infections reported in MA residents are non-toxigenic (not cholera disease). Toxigenic *V. cholerae* infections are rare and typically acquired via international travel. Person-to-person spread has not been documented. The incubation period for gastroenteritis is typically 24 hours (range of 5 to 92 hours) and for wound infections and septicemia is 1 to 7 days.

① **Notification**	• LBOHs have primary responsibility to investigate cases of *Vibrio* in their jurisdiction.
	• **Cases with *V. cholerae* isolated by culture warrant immediate follow up year-round.**
	• **From May 1 to October 31 ("Vibrio season"), all other *Vibrio* cases will flow into your "LBOH Notification for Immediate Disease" workflow.**
	  ○ Immediate follow up is requested for cases with *Vibrio parahaemolyticus* or *Vibrio species* (not further speciated) detected in stool. This is to facilitate the prompt collection of any shellfish exposures. Due to warming coastal waters, immediate follow up is also requested for *Vibrio vulnificus* infections to identify any local waters that may be associated with infection.
	  ○ An MDPH epidemiologist will add a note indicating what follow up needed. For cases warranting immediate investigation, an MDPH epidemiologist will be assigned to ensure complete case follow up.
	• Outside of these months, cases warrant routine investigation. New events will flow into your "LBOH Notification for Routine Disease" workflow.

② **Get Prepared**	• Familiarize yourself with the disease: MDPH Fact Sheets, MDPH Guide to Surveillance
	• Review **foodhandler exclusion criteria** from 105 CMR 300 for cases and their household contacts. Implementing the Exclusion of Food Handlers with Reportable Conditions
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Quick disease and transmission refresher

How you get notified

Resources to help you get prepared

List of items to ask when you reach out to the ordering provider

Tip Sheets for Enteric Case Investigations

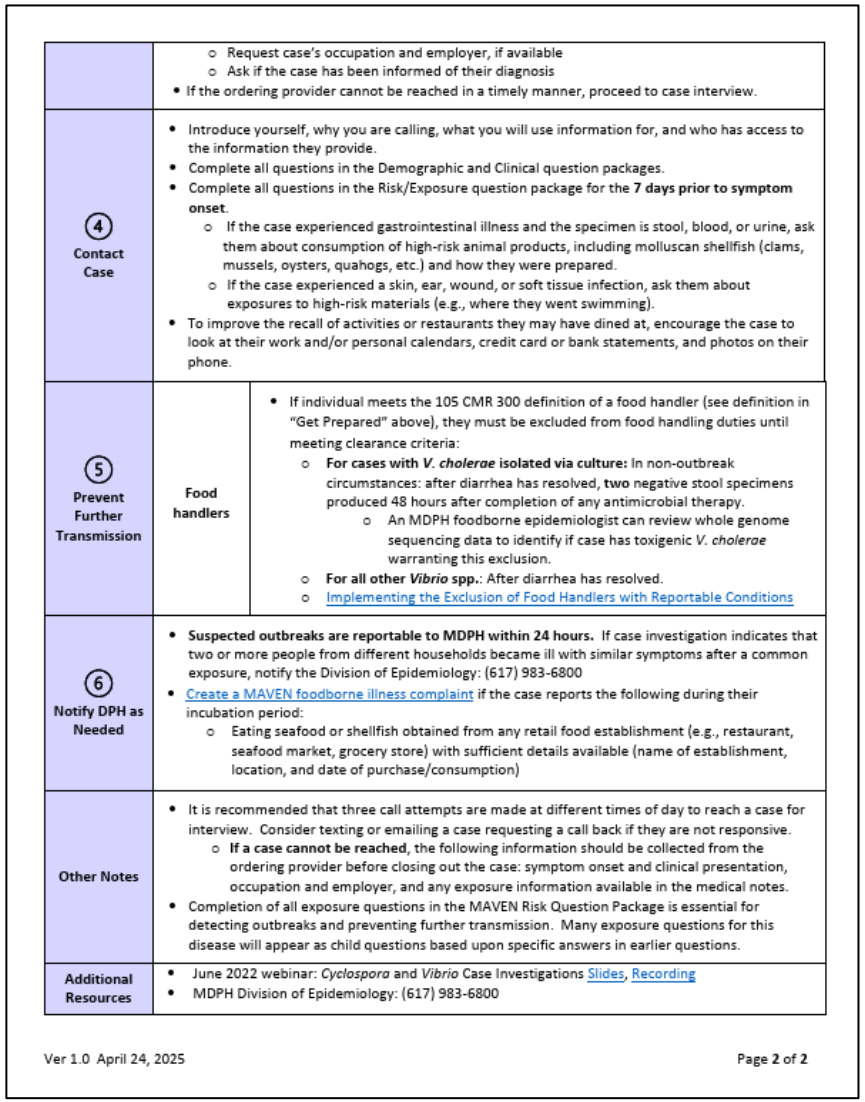
Which question packages to complete with some reminders

Reminders for handling high-risk settings to prevent further transmission

When you should notify DPH

Recommendations regarding call attempts to case, information to collect if they cannot be reached

Additional resources



		○ Request case's occupation and employer, if available ○ Ask if the case has been informed of their diagnosis • If the ordering provider cannot be reached in a timely manner, proceed to case interview.
④ Contact Case		• Introduce yourself, why you are calling, what you will use information for, and who has access to the information they provide. • Complete all questions in the Demographic and Clinical question packages. • Complete all questions in the Risk/Exposure question package for the **7 days prior to symptom onset**. ○ If the case experienced gastrointestinal illness and the specimen is stool, blood, or urine, ask them about consumption of high-risk animal products, including molluscan shellfish (clams, mussels, oysters, quahogs, etc.) and how they were prepared. ○ If the case experienced a skin, ear, wound, or soft tissue infection, ask them about exposures to high-risk materials (e.g., where they went swimming). • To improve the recall of activities or restaurants they may have dined at, encourage the case to look at their work and/or personal calendars, credit card or bank statements, and photos on their phone.
⑤ Prevent Further Transmission	Food handlers	• If individual meets the 105 CMR 300 definition of a food handler (see definition in "Get Prepared" above), they must be excluded from food handling duties until meeting clearance criteria: ○ **For cases with *V. cholerae* isolated via culture:** In non-outbreak circumstances: after diarrhea has resolved, **two** negative stool specimens produced 48 hours after completion of any antimicrobial therapy. ○ An MDPH foodborne epidemiologist can review whole genome sequencing data to identify if case has toxigenic *V. cholerae* warranting this exclusion. ○ **For all other *Vibrio* spp.**: After diarrhea has resolved. ○ Implementing the Exclusion of Food Handlers with Reportable Conditions
⑥ Notify DPH as Needed		• **Suspected outbreaks are reportable to MDPH within 24 hours.** If case investigation indicates that two or more people from different households became ill with similar symptoms after a common exposure, notify the Division of Epidemiology: (617) 983-6800 • Create a MAVEN foodborne illness complaint if the case reports the following during their incubation period: ○ Eating seafood or shellfish obtained from any retail food establishment (e.g., restaurant, seafood market, grocery store) with sufficient details available (name of establishment, location, and date of purchase/consumption)
Other Notes		• It is recommended that three call attempts are made at different times of day to reach a case for interview. Consider texting or emailing a case requesting a call back if they are not responsive. ○ **If a case cannot be reached**, the following information should be collected from the ordering provider before closing out the case: symptom onset and clinical presentation, occupation and employer, and any exposure information available in the medical notes. • Completion of all exposure questions in the MAVEN Risk Question Package is essential for detecting outbreaks and preventing further transmission. Many exposure questions for this disease will appear as child questions based upon specific answers in earlier questions.
Additional Resources		• June 2022 webinar: *Cyclospora* and *Vibrio* Case Investigations Slides, Recording • MDPH Division of Epidemiology: (617) 983-6800

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Tip Sheets for Enteric Case Investigations

Which question packages to complete with some reminders

Reminders for handling high-risk settings to prevent further transmission

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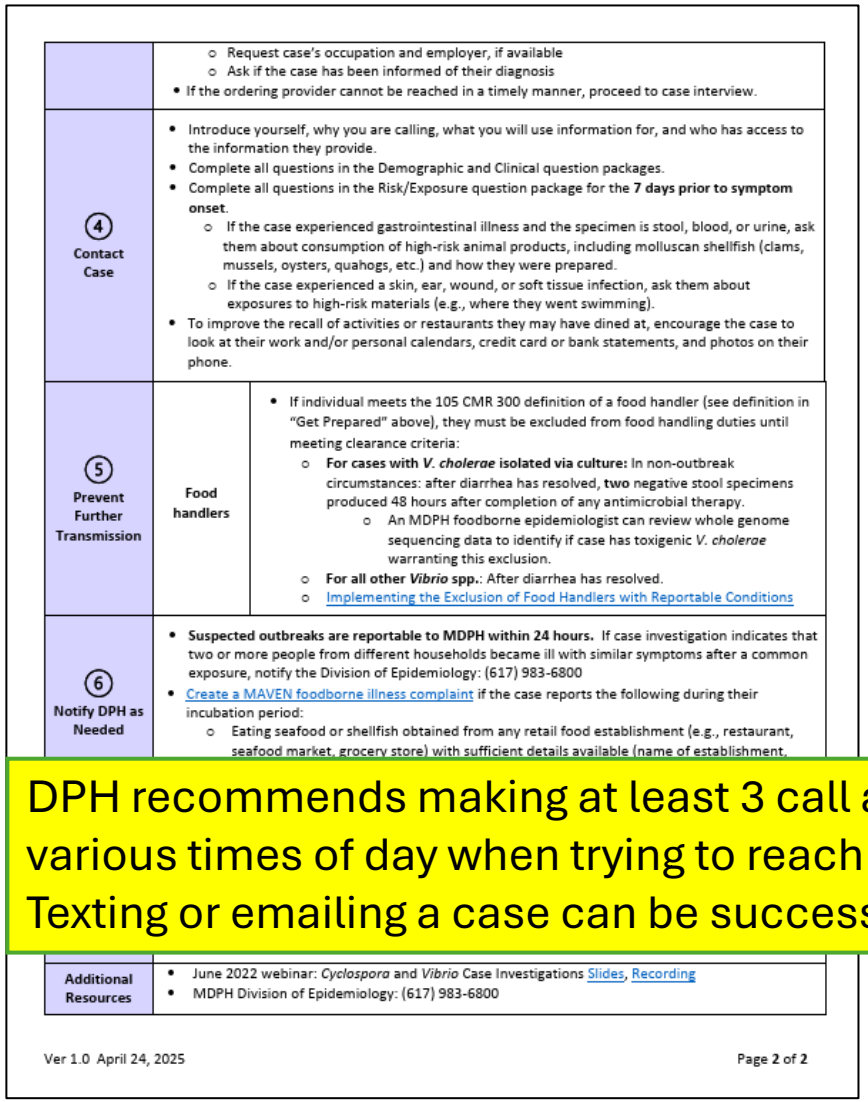

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DPH recommends making at least 3 call attempts at various times of day when trying to reach a case. Texting or emailing a case can be successful too!

REMINDER: LBOH Raw Milk Survey

- Survey will assess the availability, regulations, and sales of raw milk direct-to-consumer from licensed dairy farms in MA
- Responses will be summarized in aggregate
- DPH Epis may use collected data to support enteric outbreak investigations associated with raw milk consumption
- Survey intended for all LBOHs, with or without a licensed raw milk dairy farm
- Email Samantha.Swartz@mass.gov and Geena.M.Chiumento@mass.gov with any questions

PLEASE TAKE SURVEY BY JULY 11TH HERE:
https://forms.office.com/g/nwuRnsi8Es

Seasonal Reminders

Enteric Illness

- Illness caused by bacteria, viruses, parasites, and toxins that usually enter the body through the mouth
- Onset of symptoms can range from minutes to weeks
- Commonly causes gastrointestinal illness symptoms including vomiting, diarrhea, nausea, abdominal cramps, or fever
- Can be transmitted via food, water, animal contact, person-to-person, and environmental contamination.
- Causes an estimated 48 million illnesses (1 in 6 Americans!) and 3,000 deaths annually in the United States

Reportable Enteric Diseases

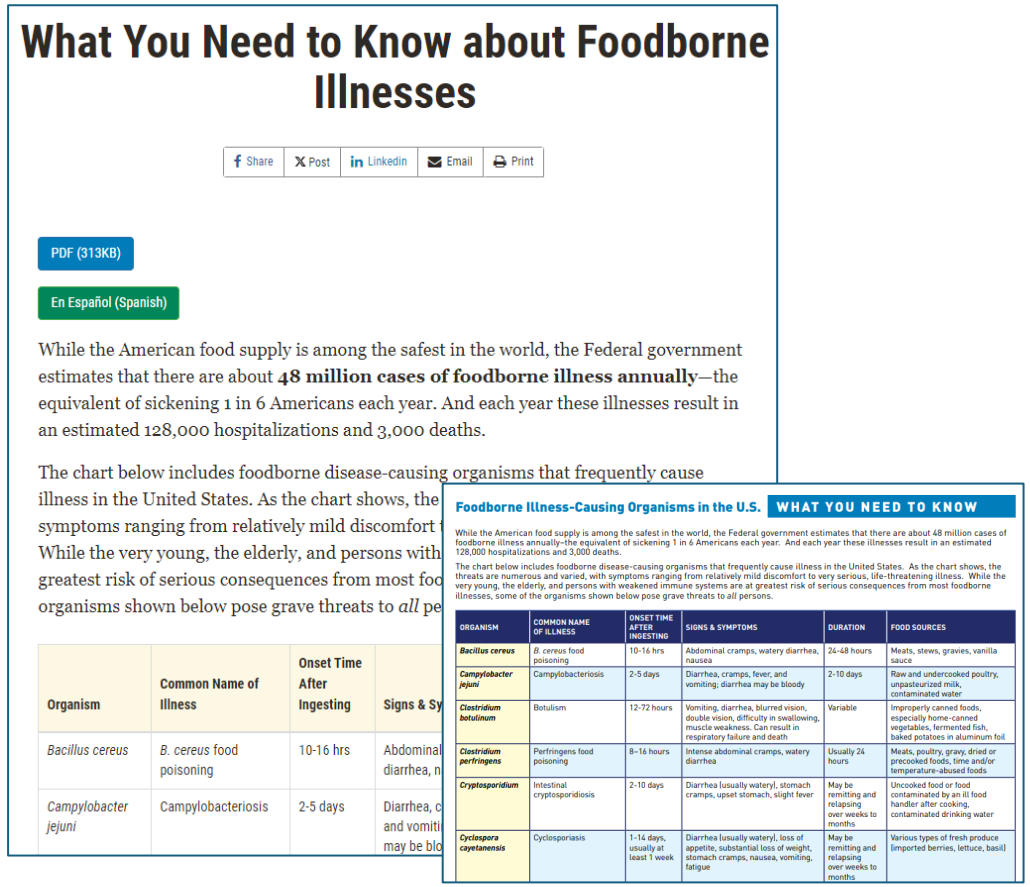
Bacteria	Botulism Campylobacteriosis Listeriosis Shiga toxin-producing *E. coli* (STEC)	Salmonellosis Shigellosis Vibriosis Yersiniosis
Parasites	Amebiasis Cryptosporidiosis	Cyclosporiasis Giardiasis
Viruses	Norovirus Hepatitis A	
Toxins	Foodborne illness due to toxins (including mushroom toxins, ciguatera toxins, scombrotoxin, tetrodotoxin, paralytic shellfish toxin and amnesic shellfish toxin, staphylococcus enterotoxin and others)*	

*These are reportable by healthcare providers and often are not confirmed by laboratory testing.

105 CMR 300: Reportable diseases, surveillance, and isolation and quarantine requirements

Quick References

FDA What You Need to Know about Foodborne Illness



What You Need to Know about Foodborne Illnesses

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PDF (313KB)

En Español (Spanish)

While the American food supply is among the safest in the world, the Federal government estimates that there are about **48 million cases of foodborne illness annually**—the equivalent of sickening 1 in 6 Americans each year. And each year these illnesses result in an estimated 128,000 hospitalizations and 3,000 deaths.

The chart below includes foodborne disease-causing organisms that frequently cause illness in the United States. As the chart shows, the
symptoms ranging from relatively mild discomfort
While the very young, the elderly, and persons with
greatest risk of serious consequences from most foo
organisms shown below pose grave threats to *all* pe

Organism	Common Name of Illness	Onset Time After Ingesting	Signs & Sy
Bacillus cereus	*B. cereus* food poisoning	10-16 hrs	Abdominal diarrhea, n
Campylobacter jejuni	Campylobacteriosis	2-5 days	Diarrhea, c and vomiti may be blo

Foodborne Illness-Causing Organisms in the U.S. WHAT YOU NEED TO KNOW

While the American food supply is among the safest in the world, the Federal government estimates that there are about 48 million cases of foodborne illness annually--the equivalent of sickening 1 in 6 Americans each year. And each year these illnesses result in an estimated 128,000 hospitalizations and 3,000 deaths.

The chart below includes foodborne disease-causing organisms that frequently cause illness in the United States. As the chart shows, the threats are numerous and varied, with symptoms ranging from relatively mild discomfort to very serious, life-threatening illness. While the very young, the elderly, and persons with weakened immune systems are at greatest risk of serious consequences from most foodborne illnesses, some of the organisms shown below pose grave threats to *all* persons.

ORGANISM	COMMON NAME OF ILLNESS	ONSET TIME AFTER INGESTING	SIGNS & SYMPTOMS	DURATION	FOOD SOURCES
Bacillus cereus	*B. cereus* food poisoning	10-16 hrs	Abdominal cramps, watery diarrhea, nausea	24-48 hours	Meats, stews, gravies, vanilla sauce
Campylobacter jejuni	Campylobacteriosis	2-5 days	Diarrhea, cramps, fever, and vomiting; diarrhea may be bloody	2-10 days	Raw and undercooked poultry, unpasteurized milk, contaminated water
Clostridium botulinum	Botulism	12-72 hours	Vomiting, diarrhea, blurred vision, double vision, difficulty in swallowing, muscle weakness. Can result in respiratory failure and death	Variable	Improperly canned foods, especially home-canned vegetables, fermented fish, baked potatoes in aluminum foil
Clostridium perfringens	Perfringens food poisoning	8–16 hours	Intense abdominal cramps, watery diarrhea	Usually 24 hours	Meats, poultry, gravy, dried or precooked foods, time and/or temperature-abused foods
Cryptosporidium	Intestinal cryptosporidiosis	2-10 days	Diarrhea (usually watery), stomach cramps, upset stomach, slight fever	May be remitting and relapsing over weeks to months	Uncooked food or food contaminated by an ill food handler after cooking, contaminated drinking water
Cyclospora cayetanensis	Cyclosporiasis	1-14 days, usually at least 1 week	Diarrhea (usually watery), loss of appetite, substantial loss of weight, stomach cramps, nausea, vomiting, fatigue	May be remitting and relapsing over weeks to months	Various types of fresh produce (imported berries, lettuce, basil)

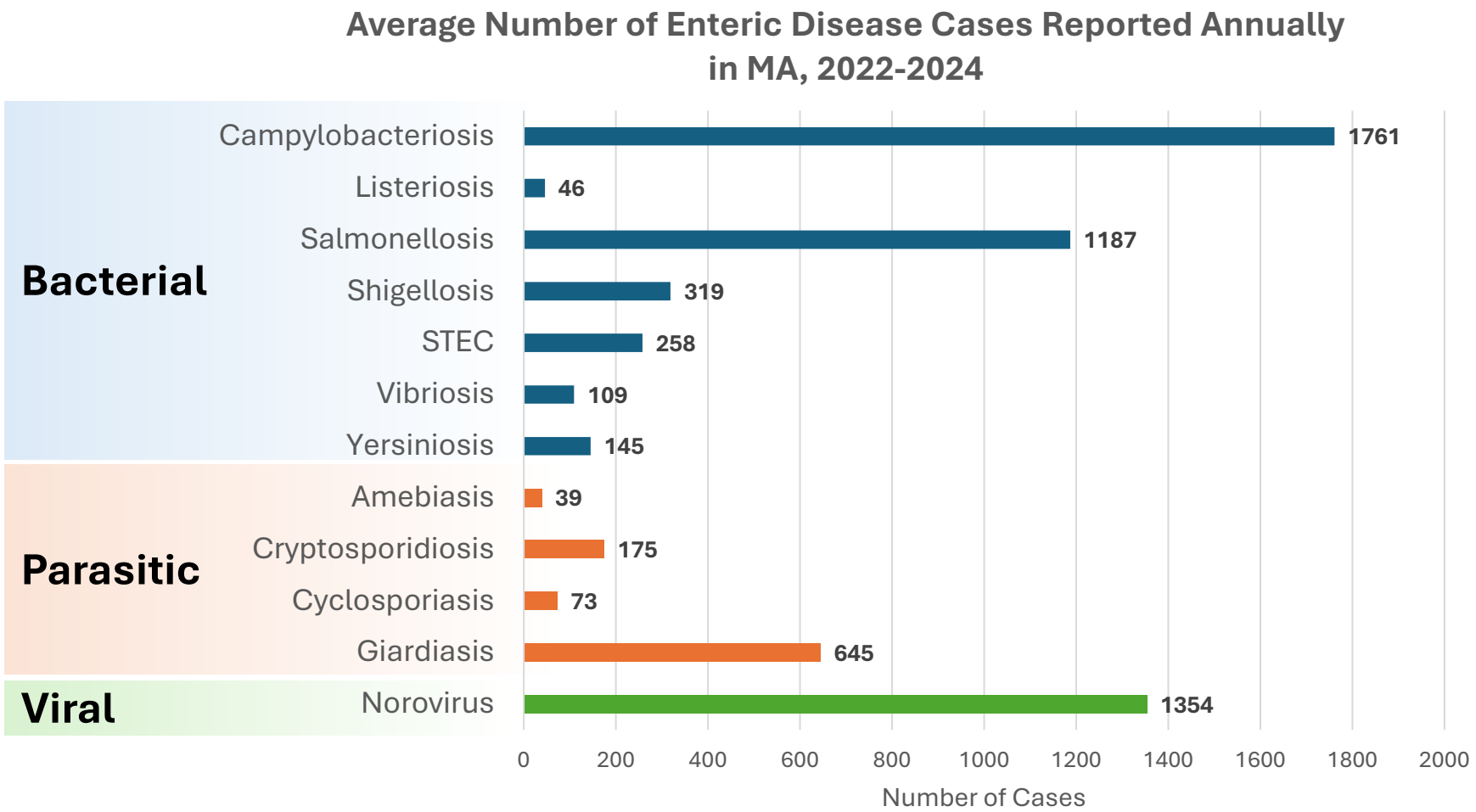
FoodSafety.gov Food Poisoning: Bacteria and Viruses

Salmonella

Download Table as PDF

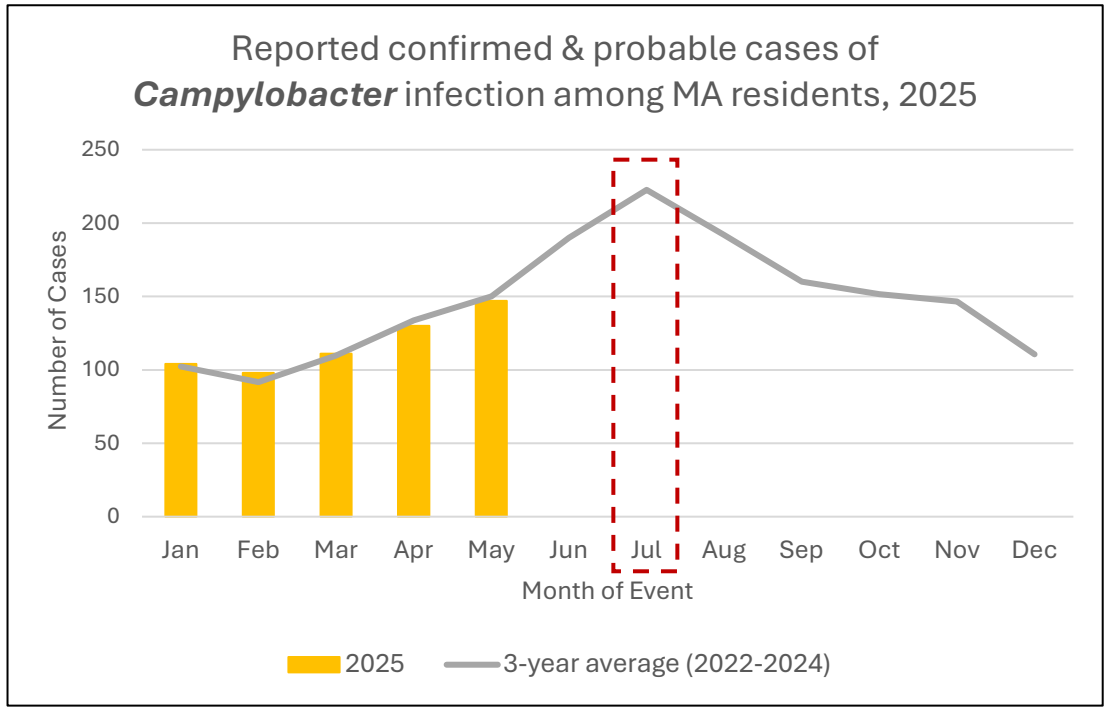
Sources	**Food:** A variety of foods have been linked to Salmonella, including vegetables, chicken, pork, fruits, nuts, eggs, beef and sprouts. **Animals and their environments:** Particularly reptiles (snakes, turtles, lizards), amphibians (frogs), birds (baby chicks) and pet food and treats.
Incubation period	6 hours to 6 days
Symptoms	Diarrhea, fever, stomach cramps, vomiting
Duration of illness	4 to 7 days
What to do	Drink plenty of fluids and get rest. If you cannot drink enough fluids to prevent dehydration or if your symptoms are severe, call your doctor. Antibiotics are recommended only for patients who have a serious illness (such as severe diarrhea, high fever, or bloodstream infection), or are more likely to develop a severe illness or complications (infants, adults over 65 years old, and people with weakened immune systems).
Prevention	• Avoid eating high-risk foods, including raw or lightly cooked eggs, undercooked ground beef or poultry, and unpasteurized (raw) milk. • Wash your hands after contact with animals, their food or treats, or their living environment.

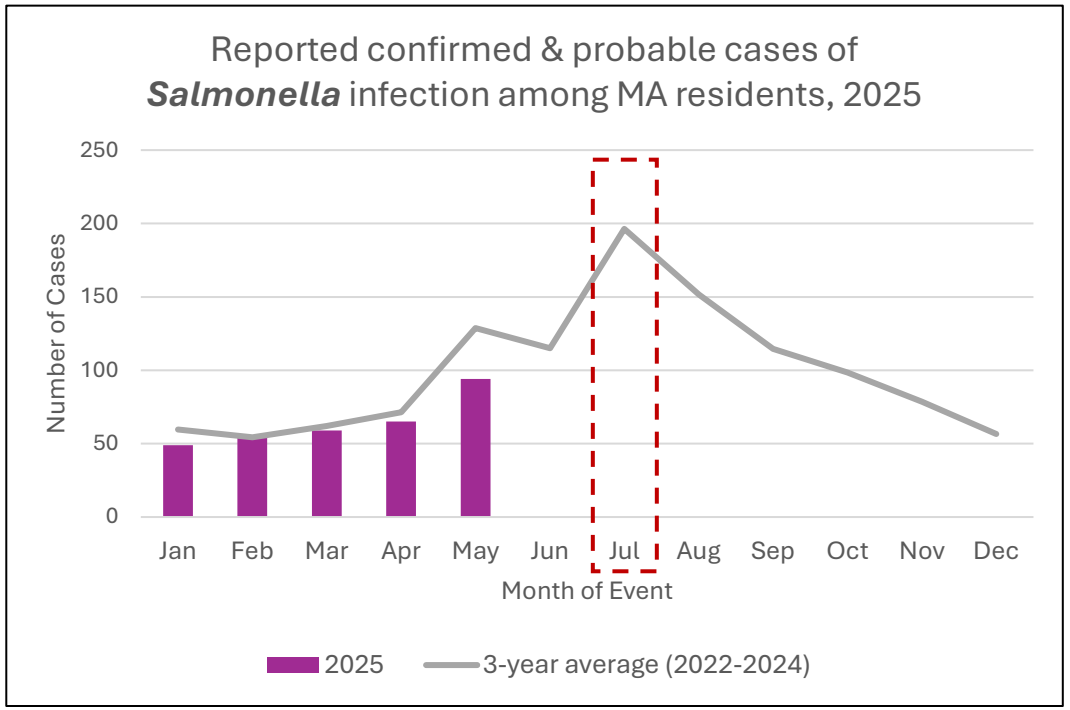
Enteric Disease Cases in MA



Data source: Bureau of Infectious Disease and Laboratory Sciences. Data as of 6/25/25 and are subject to change.
Confirmed and probable cases included for all diseases except STEC, which also includes suspect cases.

It’s the most wonderful time of the year!





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It's *Cyclospora* and *Vibrio* Season!

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				Cyclospora							
				Vibrio parahaemolyticus or *Vibrio* species from stool*							

*Additional nuances based on test method. An MDPH epidemiologist will write a note indicating the follow up needed.

As an immediate disease:

- Expectation to conduct case investigation within 1 business day of report
- Prioritize over routine investigations
- A DPH epidemiologist will also be assigned to the case to ensure prompt case investigation and assist with follow-up as needed

Why the seasonal switch?

Goal: To quickly conduct case interview and obtain an accurate food history.

This allows for identification of common exposures among cases, and prevention of additional illness.

Cyclospora

- No routine whole genome sequencing to identify cases likely to have a shared exposure.
- Foods or restaurants commonly reported across cases are investigated.
- Implicated foods are recalled and removed from the food supply.

Vibrio parahaemolyticus or ***Vibrio*** species from stool

- Bacteria naturally increase in coastal water during the summer.
- Shellfish exposures reported by cases are shared with the DPH Division of Food Protection for prompt traceback.
- Commonly implicated harvest areas may have a voluntary or regulatory closure to prevent further illnesses.

For a more in-depth review:

Cyclospora and Vibrio Case Investigations (June 2022) Slides, Recording

NEW Cyclospora and Vibrio Case Investigation Tip Sheets

Reminders on Non-Stool Specimen Sources

Do I need ask an exposure history if the case's specimen is…

- Urine?

Yes. A urinary tract infection (UTI) can follow gastrointestinal (GI) infection (symptomatic or asymptomatic), or urine could become contaminated with feces during specimen collection.

- If no GI symptoms present, use UTI symptom onset date.
- Ask about exposures during 10 days prior to onset of symptoms.

- Blood?
- Joint aspirate?
- Tissue?

Ideally, yes. For most reportable enteric pathogens, isolation or detection from any clinical specimen is reportable and warrants investigation.

- Invasive infections (e.g., bacteremia, meningitis, osteomyelitis septic arthritis) most commonly occur in people who are very young or old, or have a weakened immune system.
- If GI symptoms are reported, use their GI symptom onset date.
- If no GI symptoms are reported, use their invasive symptom onset date.

Reminders on Non-Stool Specimen Sources

What type of specimen source is needed to **clear foodhandling cases** whose original specimen was…

- Urine? 
- Blood? 
- Joint aspirate? 
- Tissue? 

A stool specimen. Even if a case's original specimen was not stool, to be cleared to return to foodhandling duties (per 105 CMR 300), stool specimen(s) negative for the target pathogen must be produced, since we are concerned about fecal-oral transmission.

Reminders on Foodhandler Exclusion

Collecting case **occupation and employer information** matters!

- If case meets foodhandler definition, they must be excluded from foodhandling duties until criteria are met, per 105 CMR 300.
- Exclusion criteria vary by disease
- LBOHs should coordinate efforts to ensure the individual meets criteria before returning to food handling duties

From 105 CMR 300:

Food Handler. Any person directly preparing or handling food. This could include the food handling facility owner, individual having supervisory or management duties, person on the payroll, family member, volunteer, person performing work under contractual agreement, or any other person working in a food handling facility. Food Handler also includes any person handling clean dishes or utensils. Any person who dispenses medications by hand, assists in feeding, or provides mouth care shall be considered food handlers for the purpose of 105 CMR 300.000. In health care facilities, this includes those who set up trays for patients to eat, feed or assist patients in eating, give oral medications or give mouth/denture care. In day care facilities, schools and community residential programs, this includes those who prepare food for clients to eat, feed or assist clients in eating, or give oral medications. Food Handler does not include individuals in private homes preparing or serving food for individual family consumption.

Reminders on Foodhandler Exclusion

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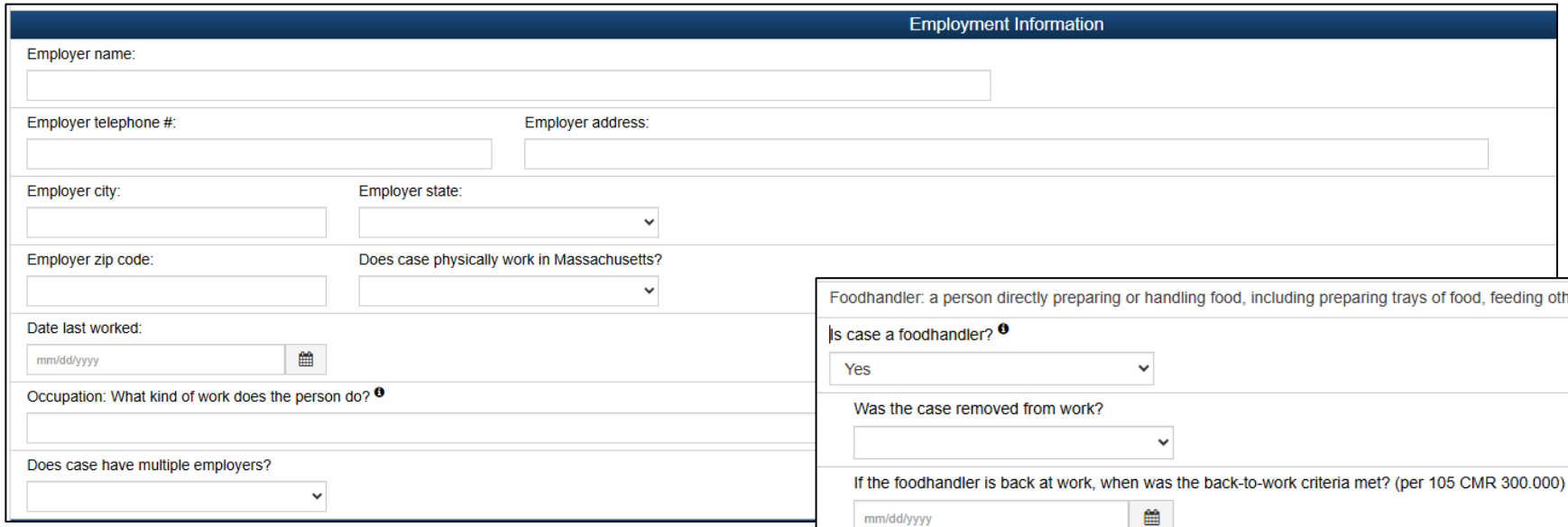
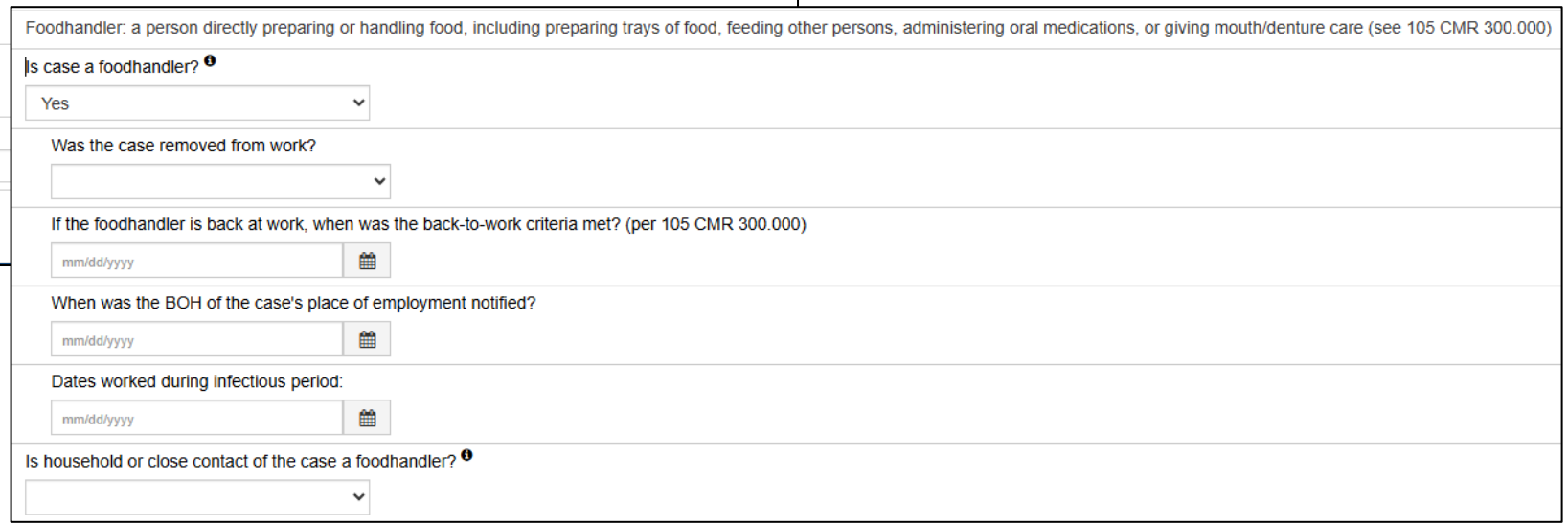
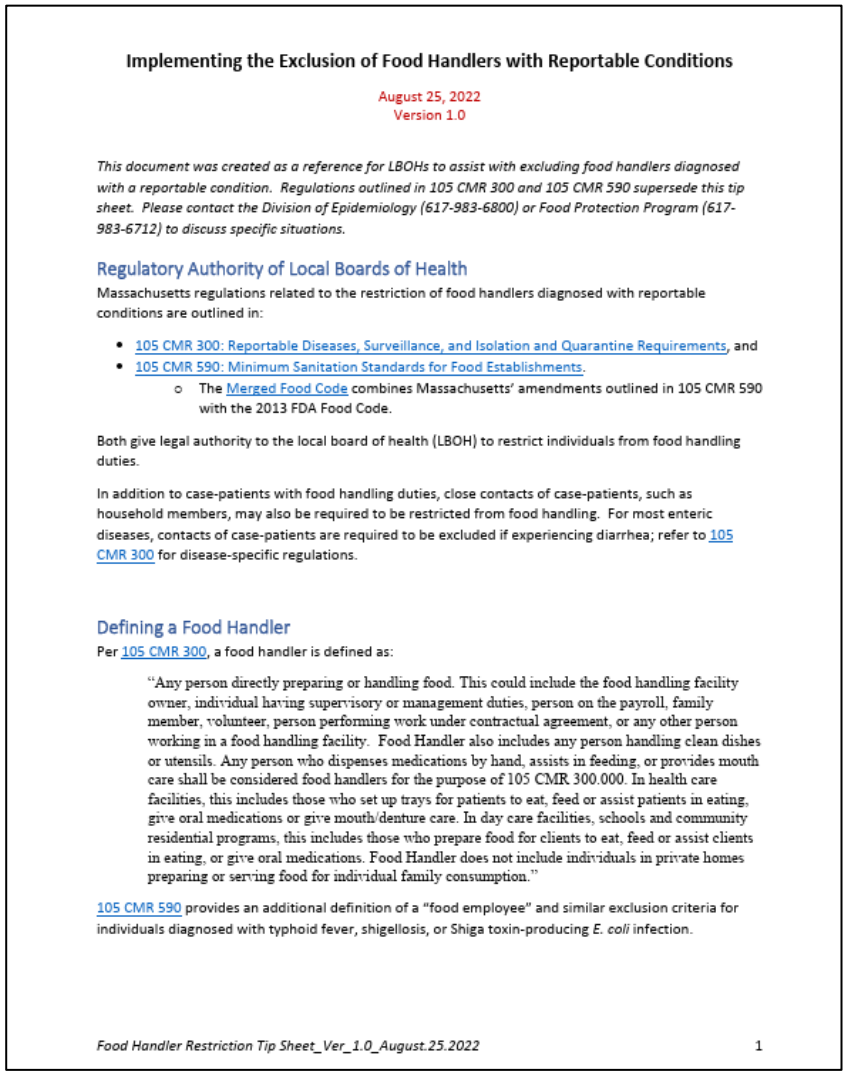


Demographic Question Package



Risk/Exposure Question Package

There's a Tip Sheet for that!



Implementing the Exclusion of Food Handlers with Reportable Conditions

August 25, 2022
Version 1.0

This document was created as a reference for LBOHs to assist with excluding food handlers diagnosed with a reportable condition. Regulations outlined in 105 CMR 300 and 105 CMR 590 supersede this tip sheet. Please contact the Division of Epidemiology (617-983-6800) or Food Protection Program (617-983-6712) to discuss specific situations.

Regulatory Authority of Local Boards of Health

Massachusetts regulations related to the restriction of food handlers diagnosed with reportable conditions are outlined in:

- 105 CMR 300: Reportable Diseases, Surveillance, and Isolation and Quarantine Requirements, and
- 105 CMR 590: Minimum Sanitation Standards for Food Establishments.
  - The Merged Food Code combines Massachusetts' amendments outlined in 105 CMR 590 with the 2013 FDA Food Code.

Both give legal authority to the local board of health (LBOH) to restrict individuals from food handling duties.

In addition to case-patients with food handling duties, close contacts of case-patients, such as household members, may also be required to be restricted from food handling. For most enteric diseases, contacts of case-patients are required to be excluded if experiencing diarrhea; refer to 105 CMR 300 for disease-specific regulations.

Defining a Food Handler

Per 105 CMR 300, a food handler is defined as:

> "Any person directly preparing or handling food. This could include the food handling facility owner, individual having supervisory or management duties, person on the payroll, family member, volunteer, person performing work under contractual agreement, or any other person working in a food handling facility. Food Handler also includes any person handling clean dishes or utensils. Any person who dispenses medications by hand, assists in feeding, or provides mouth care shall be considered food handlers for the purpose of 105 CMR 300.000. In health care facilities, this includes those who set up trays for patients to eat, feed or assist patients in eating, give oral medications or give mouth/denture care. In day care facilities, schools and community residential programs, this includes those who prepare food for clients to eat, feed or assist clients in eating, or give oral medications. Food Handler does not include individuals in private homes preparing or serving food for individual family consumption."

105 CMR 590 provides an additional definition of a "food employee" and similar exclusion criteria for individuals diagnosed with typhoid fever, shigellosis, or Shiga toxin-producing *E. coli* infection.

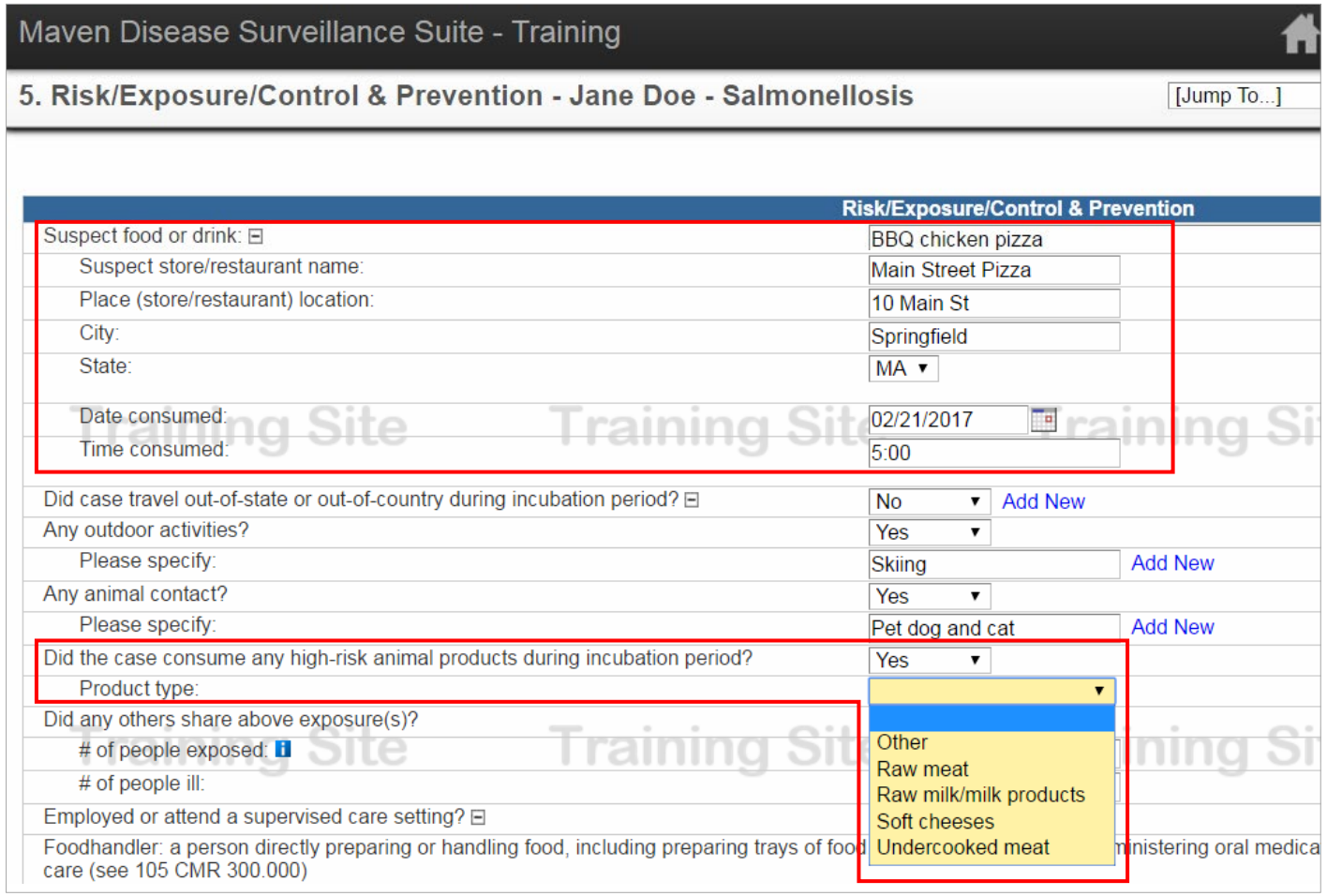
Food Handler Restriction Tip Sheet_Ver_1.0_August.25.2022 1

Available in MAVEN Help!

Enteric Case Interviews

Why all the questions?

The evolution of risk questions



- Prior to 2018, there used to be fewer questions
- For many enteric disease events including *Salmonella*, *Campylobacter*, and STEC, there were only two food history questions
- New food history questions piloted in 2017 for Salmonella and Campylobacter
  - Without questions: ~25% of cases had <u>any</u> food item reported during case interview
  - With piloted questions: 48% of Campy and 65% of Salmonella cases had 1+ high risk exposures reported

Why all the questions

- There are national recommendations for standard, disease-specific data elements to be collected for:
  - *Campylobacter*
  - STEC
  - *Yersinia*

  CSTE position statement

  - *Salmonella*

  → **CSTE brief**

  - *Cyclospora*
  - *Listeria*
  - *Vibrio*
  - *Salmonella* Typhi/Paratyphi

  CDC case report form

- Disease events have otherwise been updated to ensure capture of disease-specific exposures based on mode of transmission

Overarching goals: Collect comprehensive and standardized exposure information upon initial interview, detect outbreaks, contribute to national investigations, provide applicable education and prevention information

Improving risk history questions across enteric diseases

Disease	Updated Risk/Exposure question package
Campylobacteriosis	2018 – new **food** exposure questions 2023 – improved **animal** contact questions 2026* – revised to align with 2025 CSTE position statement, reduce burden
Cryptosporidiosis	2022 – new **animal** contact and **water** exposure questions
Cyclosporiasis	2022 – new dynamic question package with **food** exposure questions
Norovirus	2023 – improved questions to focus on **person-to-person** transmission
Salmonellosis	2018 – new **food** exposure questions 2023 – improved **animal** contact questions 2026* – revised exposure questions to align with 2024 CSTE Brief
STEC	2018 – new **food** exposure questions to align with 2017 CSTE position statement
Shigellosis	2022 – new questions to assess **water** exposures, person-to-person transmission
Yersiniosis	2026* - revised exposure questions to align with 2024 CSTE position statement

Enteric Case Interviews

Helping cases with recall

...expanding upon Introduction to Enteric Case Investigations, and Steps in an Enteric Disease Case Investigation outlined in 2023 Enteric Refresher

Why interviews matter

- Used to identify potential **source(s) of illness** and prevent others from becoming ill
- Provide **education** on pathogen to prevent future illness
- Advise how to **prevent spread to others**, including household members and in sensitive settings where an individual may work, volunteer, or attend.

The information needed for most enteric disease investigations comes from the ill individual or their parent/guardian, not a medical provider.

Detecting outbreaks through routine interviews

1) Diagnosed case reports a common exposure with others ill
2) More than one diagnosed case reports the same exposure
3) Whole genome sequencing of bacterial isolates identifies “cluster” of cases more likely to be due to common exposure
   - Information available from the initial, routine interview is reviewed and used to inform additional follow up. Reinterview may be requested.

Impact of reporting lag in detection of outbreaks

Week	Day	
1	1	Contaminated food eaten
	3	Symptoms begin
	5	Symptoms persist. Medical attention is sought, and clinical testing pursued
	6	Laboratory tests clinical sample
2	9	Clinical lab reports cause of illness
	9-16	Bacterial isolate submitted to State Public Health Lab (SPHL)
3	16-21	SPHL performs WGS
4	21	Isolate's WGS compared with others in MA
	22	WGS is shared with CDC via PulseNet
	23	CDC reviews WGS, determines if related to national isolates

Initial report to public health

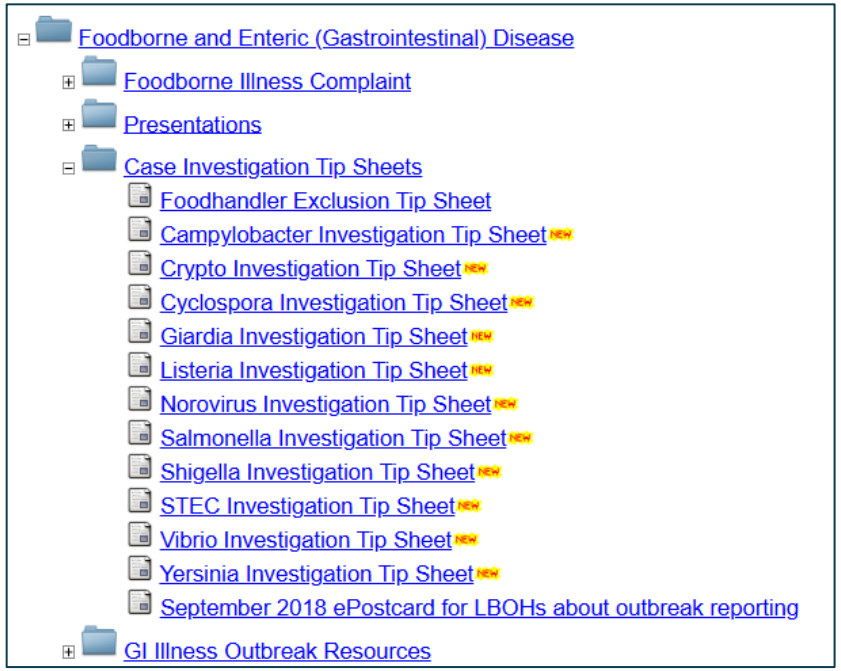
Local WGS cluster detected

Multi-state WGS cluster detected

Complete collection of MAVEN Risk Question Package variables when a case is first reported helps with early outbreak detection and prevents further delays in identifying a common exposure once included in a WGS cluster.

Prepare for the interview

- ✓ Understand the pathogen and how it spreads
- ✓ Review the questionnaire being used
- ✓ Familiarize yourself with exclusion of foodhandlers and individuals in sensitive settings (childcare programs, schools, etc.)
- ✓ Review information available in MAVEN
- ✓ Grab a calendar and consider recent holidays or events
- ✓ Find a quiet, confidential place before calling



MAVEN Help Tip Sheets

Conduct the interview

In general

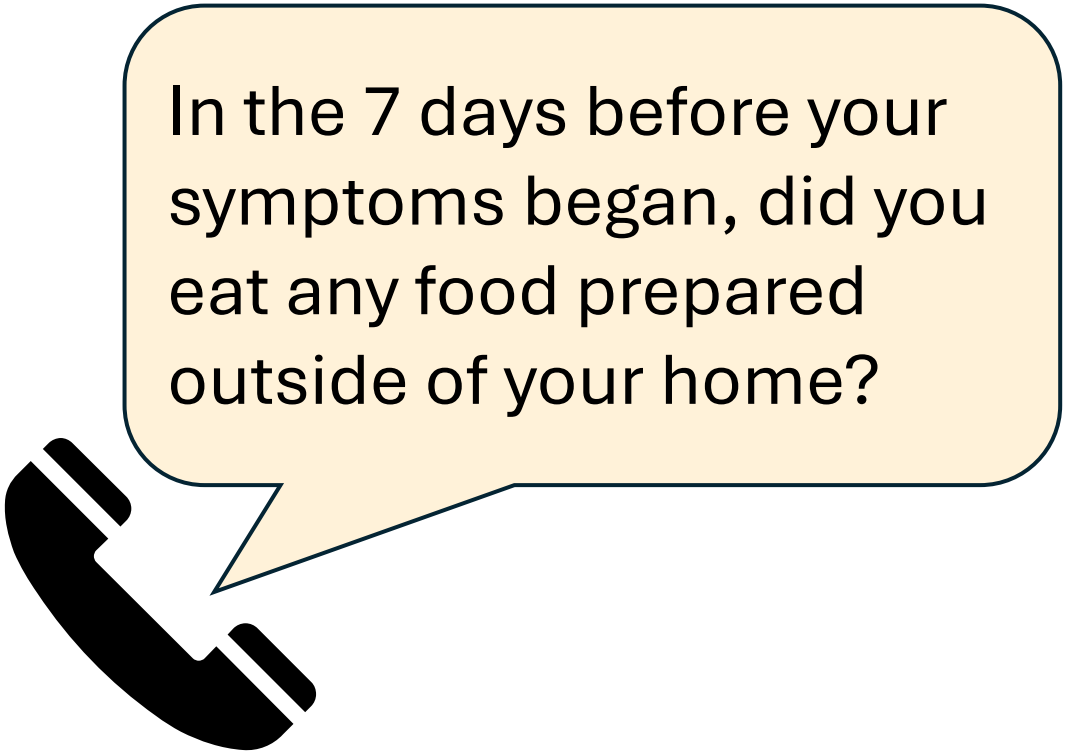
- Quickly and succinctly relay who you are, why you are calling, and why the interview is important
- Be conversational, build trust and rapport, show empathy

Go through MAVEN question packages

- Begin by understanding illness (Clinical Question Package)
  - *Accurate symptom onset date and time are critical
- Ask all questions in the Risk Question Package
  - Skip around the questionnaire if needed based on flow of conversation and what makes sense for you
  - Document in the MAVEN notes exposures that may not fall within a listed question
- Save for last:
  - Demographic Question Package (race, ethnicity, sexual orientation, occupation, employer)
  - Exclusion from sensitive settings (foodhandler, child care, etc.)

Activity: You are the case

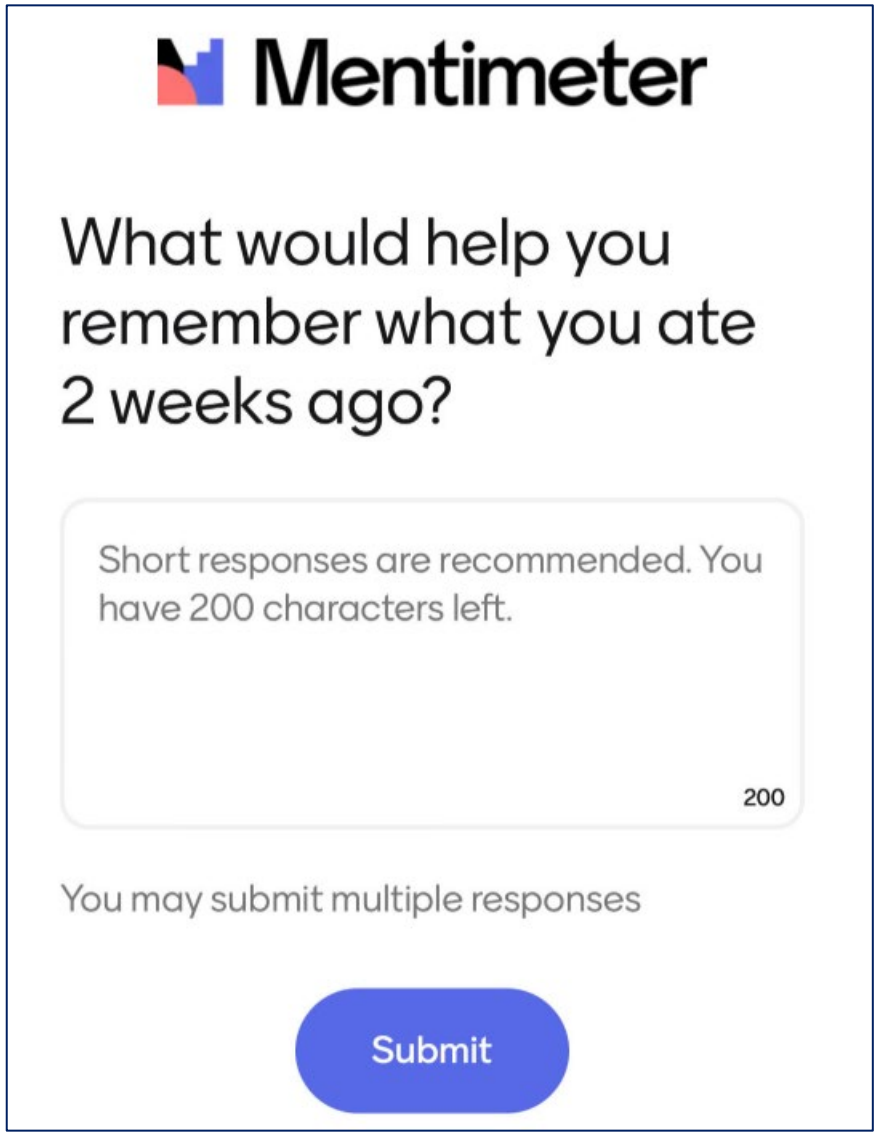
- **Illness onset (Day 0)**: June 27 at 6:00am
- **Diagnosis**: Salmonellosis
- **Incubation period:** 6 hours – 6 days



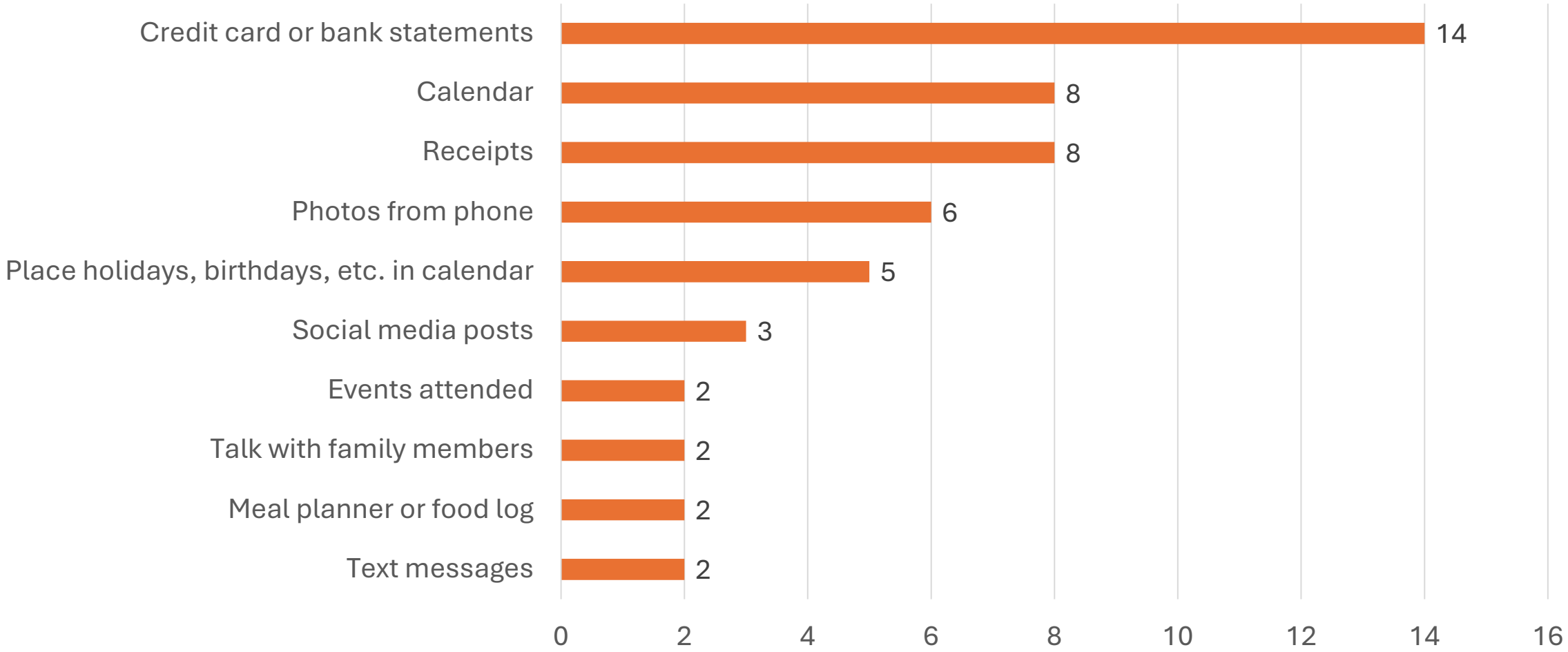
2025 JUNE

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
					Day - 7	Day - 6
22	23	24	25	26	27	28
Day - 5	Day - 4	Day - 3	Day - 2	Day - 1	Day - 0	
29	30					

https://www.menti.com/alps3taftm6h

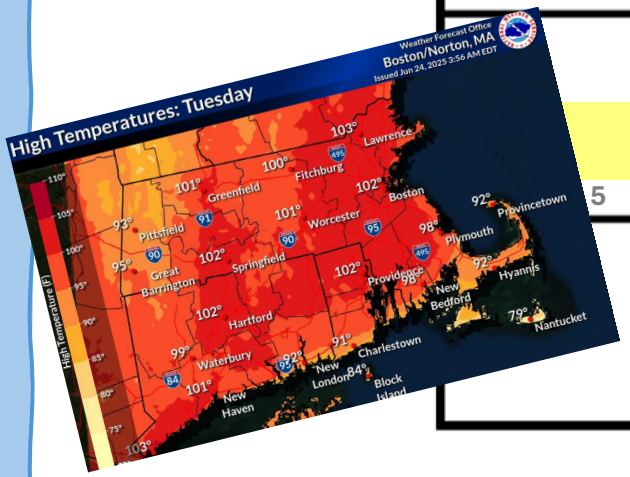


Poll results: What would help you remember what you ate two weeks ago?



2025 JUNE

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15 Father's Day	16	17	18	19 Juneteenth	20 Day - 7	21 Day - 6
5	23 Day - 4	24 Day - 3	25 Day - 2	26 Day - 1	27 Day - 0	28
	30					



Food recall challenges

- Constantly working against a lag in diagnosis and reporting to public health
- For all cases, acknowledge that it is really challenging to recall exposures that took place so long ago
  - Anchor recall with holidays or activities they may have done
  - Review any **documentation** that is available to help with recall

Sources of documentation

Do these help you recall your food exposures 6/20-6/27?

Calendar(s)

It could be helpful to review any personal or work calendars you use as a reminder of any events you had scheduled during this time.

Credit card statements

When you go out to eat, get takeout, or buy groceries, do you pay with a credit card? Looking up your transactions online could help jog your memory.

Receipts, online orders

When you purchase food, do you ever order from an app or do online ordering? Do you have any emailed receipts or recorded purchases in any apps?

Camera roll on phone

Do you take pictures on your phone? Looking through those could help remind you of things you did during in the week before becoming sick.

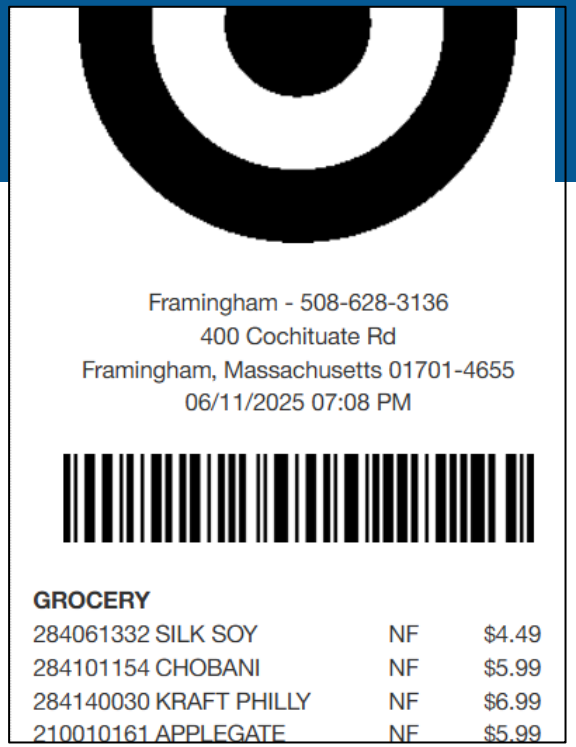
Regular places

Are there any coffee shops, pizza places, or other restaurants that you go to or get take-out from regularly?

Do you belong to any community groups that you met with during this time?

Other sources

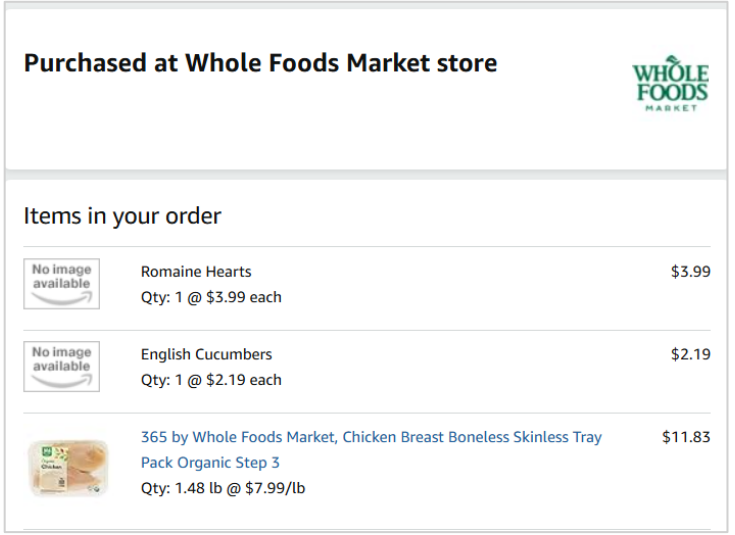
- Meal planners
- Food diaries
- Cafeteria menus
- Loyalty programs or shopper cards
- Household members



Framingham - 508-628-3136
400 Cochituate Rd
Framingham, Massachusetts 01701-4655
06/11/2025 07:08 PM

GROCERY

284061332 SILK SOY	NF	$4.49
284101154 CHOBANI	NF	$5.99
284140030 KRAFT PHILLY	NF	$6.99
210010161 APPLEGATE	NF	$5.99



Purchased at Whole Foods Market store

WHOLE FOODS MARKET

Items in your order

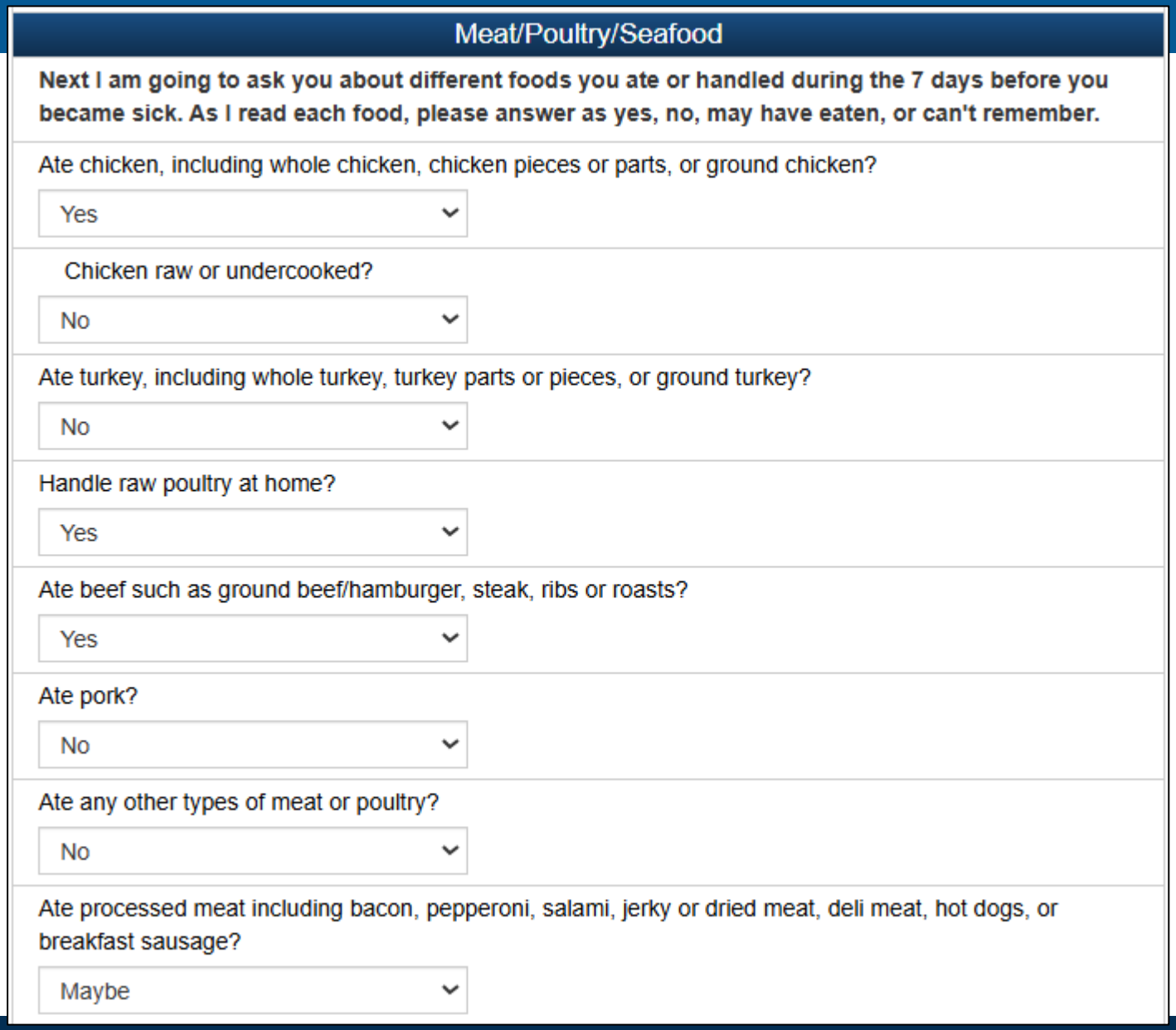
No image available	Romaine Hearts Qty: 1 @ $3.99 each	$3.99
No image available	English Cucumbers Qty: 1 @ $2.19 each	$2.19
	365 by Whole Foods Market, Chicken Breast Boneless Skinless Tray Pack Organic Step 3 Qty: 1.48 lb @ $7.99/lb	$11.83

If all else fails…

Ask about typical eating habits

Do you normally eat chicken in a typical week?

How likely is it you would have eaten it during the 7 days before you became sick?



Meat/Poultry/Seafood

Next I am going to ask you about different foods you ate or handled during the 7 days before you became sick. As I read each food, please answer as yes, no, may have eaten, or can't remember.

Ate chicken, including whole chicken, chicken pieces or parts, or ground chicken?

Yes

Chicken raw or undercooked?

No

Ate turkey, including whole turkey, turkey parts or pieces, or ground turkey?

No

Handle raw poultry at home?

Yes

Ate beef such as ground beef/hamburger, steak, ribs or roasts?

Yes

Ate pork?

No

Ate any other types of meat or poultry?

No

Ate processed meat including bacon, pepperoni, salami, jerky or dried meat, deli meat, hot dogs, or breakfast sausage?

Maybe

Integrated Food Safety Centers of Excellence Training

Start Here

The Three Phases of Effective Interviewing

- **Link**: https://foodsafetycoe.org/product/7565/
- **Format**: Video, 20 minutes long
- **Content**:
  - Three phases include: prepping for interview, conducting interview, finishing interview
  - Highlights importance of building trust

Key Points for Interviewing

- **Link**: https://foodsafetycoe.org/product/1502/
- **Format:** 2-page document

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Integrated Food Safety Centers of Excellence Training

Challenging Interview Scenario Video Series

- Link: https://foodsafetycoe.org/product/6614/
- Format: 11 videos, each 10-20 minutes in length
- Content topics:
  - Distrustful/hesitant interviewee
  - Interviewee gets off track
  - Cannot remember exposures
  - Interviewee reports ill family members
  - Seeking answers to medical questions
  - Navigating a potential outbreak situation
  - Interested in taking legal action
  - Sexual history questions
  - Using a language line
  - Providing work exclusion recommendations
  - Interviewee resides in a correctional setting

Integrated Food Safety Centers of Excellence

Integrated Food Safety Centers of Excellence Training

The 10 Cardinal Rules of Effective Interviewing

- **Link**: https://foodsafetycoe.org/product/9100/
- **Format**: Video, 30-minute or 9-minute options
- **Content**:
  1. Do a practice run
  2. Find a quiet place to do the interview
  3. Be non-judgemental
  4. Avoid leading
  5. Ask each question and accurately record what people say
  6. Ensure confidentiality
  7. Gently re-direct as needed
  8. Probe if answers are vague, especially symptom onset
  9. Provide language interpretation if needed
  10. Thank interviewee, explain how information will be used

Integrated Food Safety Centers of Excellence

Enteric Disease Sexual History Interviewing Toolkit

- Link: https://foodsafetycoe.org/product/7707/
- Format: 2-page handout
- Content:
  - Reference tool for interviewers asking sexual history questions during enteric disease interviews
  - Includes scripts that could be used to facilitate asking sexual history questions

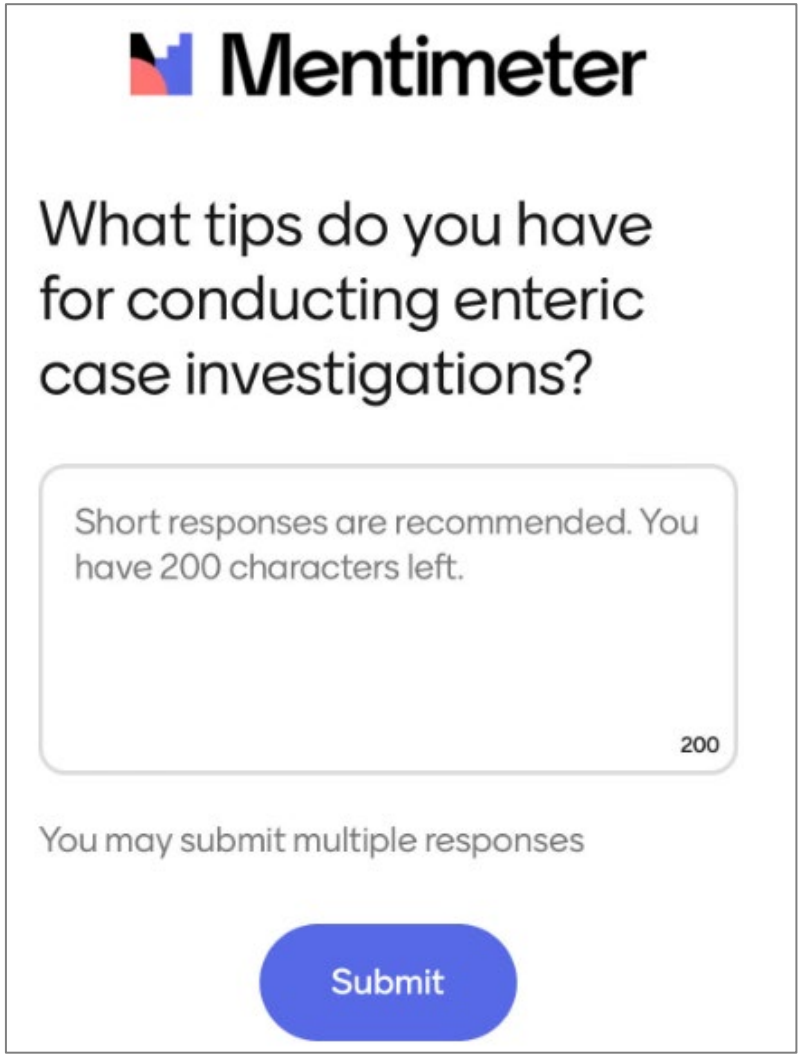
Integrated Food Safety Centers of Excellence

Additional training opportunities

- Practice mock interviews with each other
- Shadow a colleague's enteric disease case interview
- Join the mailing list for the Integrated Food Safety Centers of Excellence to learn about any new resources that are published
  - https://foodsafetycoe.org/

Ask the pros!

https://www.menti.com/alps3taftm6h



Poll results: What tips do you have for conducting enteric case investigations?

- Always start with empathy and symptom onset. Let person tell their story first.
- Ask how they're feeling first.
- After I explain why I am calling, I ask how they are feeling to start with compassion.
- Empathize with the person you are interviewing
- I say that I am calling to follow up on labs, express empathy & ask how they are doing
- Make the case feel comfortable, keep everything always confidential and let the case know that it's all kept confidential so they feel safe to share trust. Document everything and be detailed oriented.
- Let them know why you need to do the investigation – make them part of being a sleuth
- Expect it may take multiple phone encounters for case to obtain food history details. Be transparent with time and work involved for a thorough review.
- Ask about people: who they may have dined out with, or if they have been given food from someone else
- Relate any personal experiences you've had with food, restaurants, grocery stores they mention, food you like stuff recently on sale/ good seasonal produce that's going on
- Skip the wizard and go through each question package
- Practice with your summer interns!

Why Detailed Case Interviews Matter

Stories from an Epi

Story #1: A Fork-getful Meal

This outbreak was led by DPH epidemiologist Sarah Scotland

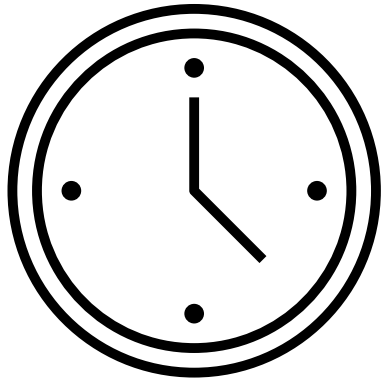
Identification of Cluster

On Wednesday, July 10th, the DPH State Public Health Laboratory notified the DPH Division of Epidemiology of a new local whole genome sequencing (WGS) cluster of ***Salmonella* Typhimurium**

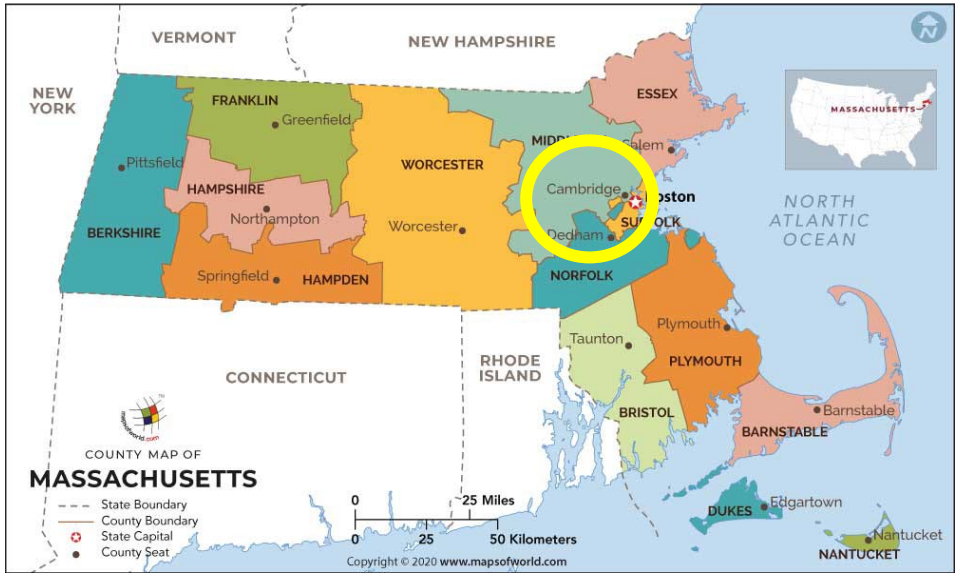
WGS is a laboratory method used to identify the DNA fingerprint of bacteria. When a group of people get sick from bacteria with the same DNA fingerprint around the same time, it is investigated as a "**WGS cluster**." Individuals included in a WGS cluster are likely to have acquired infection from a common source.

Additional Cases Added

- Throughout the summer, additional *Salmonella* Typhimurium cases are added to the WGS cluster
- Epi reviewed exposure data across cases
  - **One case reported eating food from Restaurant A on July 20th upon initial case interview**



The Cluster Continues to Grow



- By October 11th, there were 17 cases linked
- DPH epidemiologists reviewed available demographic and risk/exposure info available across cases
  - Median age of 38 years
  - Most cases lived in Middlesex County (west of Boston)
  - Some cases reported being Asian race
  - No commonly reported restaurants or other foods prepared outside the home

Finally, a hit!

- On October 17th, the 18th case was added to the WGS cluster
- Epi reviewed available exposure info obtained by the PHN during the initial case interview
  - **This case also reported eating food from Restaurant A on September 29th**
    - Case's parent shared that 15-20 family members also ate at Restaurant A with the case, all of whom had diarrhea and vomiting within 24 hours

Next steps: Despite the 2 cases' meal dates being two months apart, DPH epidemiologists reached out to LBOHs to request prompt re-interview of other linked cases, asking specifically if they ate food from Restaurant A prior to illness.

An FBI Complaint event is created in MAVEN for Restaurant A. Outbreak investigation started!

Restaurant A

Microsoft stock image of dim sum.

- Asian-style restaurant serving authentic Chinese dishes and over 60 varieties of dim sum
- Largest restaurant in the community
- Open daily for lunch and dinner
- Approximately 250 meals served daily

Re-Interviewing

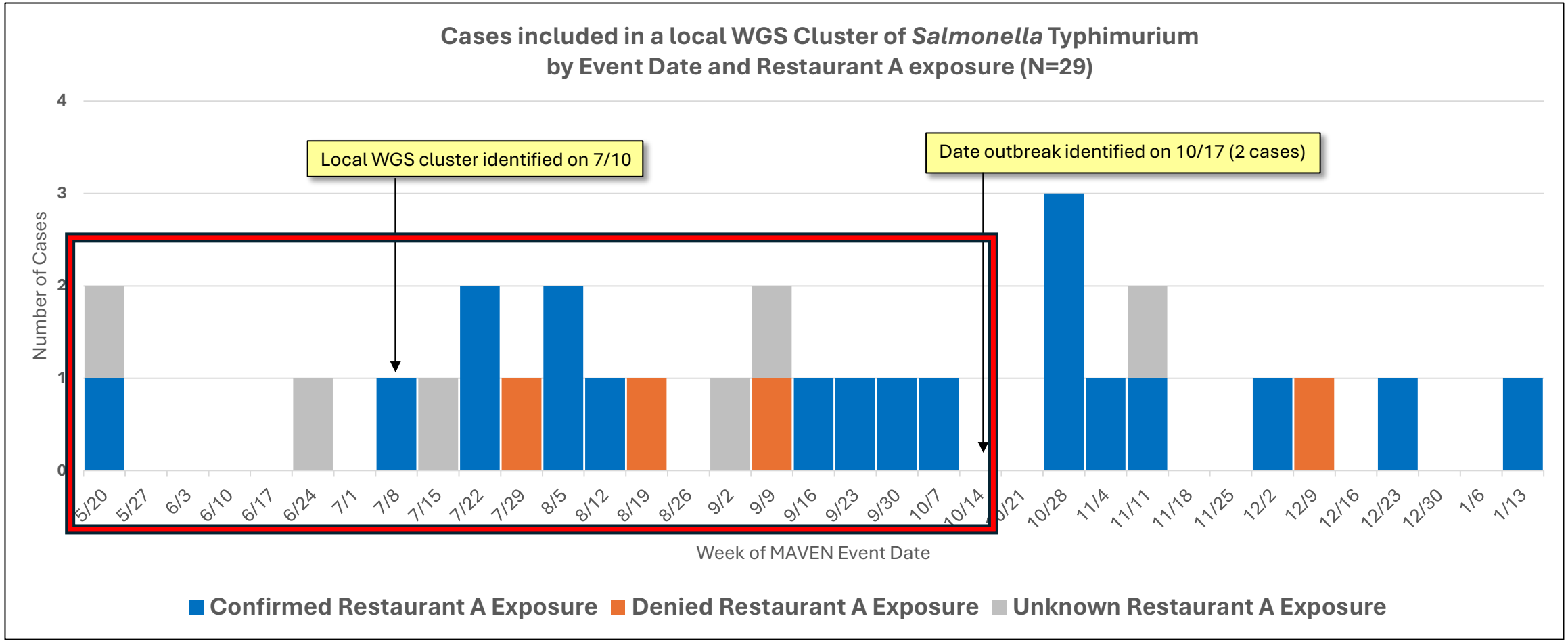
In late October, cases were re-interviewed and several cluster cases were able to recall eating food from Restaurant A in the summer.

I shared a meal with coworkers 2-3 days prior to getting sick. I can't recall what we ate but it was a bunch of little dishes.

I ate there on July 7th! My family eats there all the time.

Me and eight other family members ate there on July 22nd. Food was served family style. I was the only one who became sick.

Upon re-interview, cases recalled Restaurant A



Outbreak Investigation

- Epi data and cohort studies revealed no common dish or ingredient eaten among cases
  - Suggested *Salmonella* was persisting in the Restaurant A environment over time
- DPH Divisions of Epi and Food Protection worked with LBOH to guide environmental assessment and environmental swabbing
- What about the WGS-linked cases who denied Restaurant A exposure?

Reflections from an Epi

- Restaurant A exposure was overwhelmingly not reported or recalled during initial case interviews
  - Consider ways to improve recall of similar exposures moving forward
    - Ask about restaurants cases dine at regularly
    - Ask if they attended any parties, group meals, functions, etc.
- WGS on clinical isolates is a valuable tool to detect potential outbreaks if initial case exposure data is sparse
  - WGS routinely performed at state lab on *Salmonella*, STEC, *Shigella*, and *Listeria* isolates

Thank you to the LBOH(s) involved in this investigation!

Story #2: The Great Tail Chase

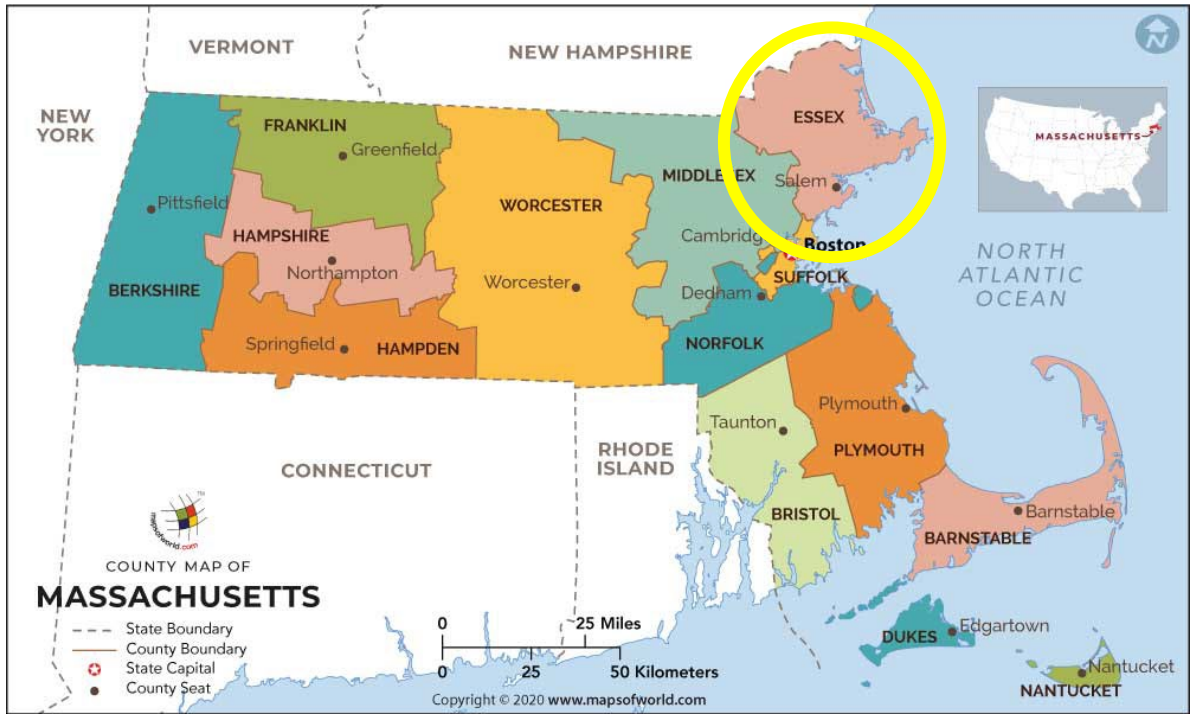
This outbreak was led by DPH epidemiologist Lindsay Bouton

Identification of cluster: Day 1

- On Monday, February 7th, the DPH State Public Health Laboratory notified the DPH Division of Epidemiology of a new local whole genome sequencing (WGS) cluster of ***Salmonella* Infantis**

Available epi information reviewed in MAVEN

- Cases lived in three different towns in Essex County
- Two cases in their 70s, one infant (<1 year old)
- Two female, one male
- No detailed exposure histories available



Next step: DPH epidemiologist reached out to LBOHs to request prompt interview of case(s) using question packages in MAVEN to try to identify a common exposure.

Information becomes available: Day 2

- Case 1: An adult male (case) and his wife are interviewed by the LBOH PHN
  - No restaurants
  - Groceries from a regional grocery chain and a local farm
    - Foods reported: chicken, beef, eggs, pasteurized milk, American cheese, leafy greens, carrots, broccoli, apples, blueberries, raspberries, peanut butter
  - No travel
  - Has two dogs, freeze dried chicken treats purchased at a local Co-op

Information becomes available: Day 2

- Case 2: Mom of infant case interviewed by LBOH PHN
  - Mostly consumes infant formula, eats some baby food (different brands)
  - No restaurants
  - Groceries from four different stores (3 regional or national chains)
  - No travel
  - Has dogs, cats, and chickens

Suspicious exposure…

- Case 1: has dogs, freeze dried chicken treats purchased at a local Co-op
- Case 2: has dogs

Next step: DPH epidemiologist contacts LBOH PHNs to reach back out to Case 1 and Case 2 to collect detailed information on pet food and pet treats.

A common exposure: Day 2-3

- Case 1 & 2 reported purchasing dog treats from the same local Co-op
- Family business operated out of a private home in Essex County
- Produced various dehydrated pet treats (“chips”)
- Treat types included chicken, beef liver, and sweet potato
  - Chicken product biggest seller
- Sold by four local retailers in Essex County

Product testing and stop sale: Day 4-5

- MA Department of Agricultural Resources (MDAR) collected product samples and submitted them to the SPHL Food Laboratory. Samples included:
  - Unopened bags of treats purchased from the local Co-op:
    - Chicken chips
    - Beef liver chips
    - Sweet potato chips
  - An opened, mixed bag of chicken and sweet potato chips from a case's home
- Initial test results indicate all four samples were presumptive positive for *Salmonella* species (all culture confirmed on Day 10)
  - Stop sale order issued with manufacturer and four retail stores where product sold

Third case is reached: Day 8

- Case 3: Adult female interviewed by DPH Epi
  - Confirmed routine purchase of dog treats from same manufacturer

Next steps: Identify source of contamination by understanding manufacturing process, prevent additional illnesses.

Site visit and press release: Day 10

- Voluntary visit made to manufacturer by LBOH and DPH
- Learned about the manufacturing of chicken chips:
  - 400lbs of chicken breast processed weekly
  - Frozen, raw chicken sliced thin on a deli slicer then placed in dehydrators for 30 hours at 160°F
    - Manufacturer of dehydrators used and USDA advise cooking chicken to 165°F prior to dehydrating process
  - Product was stored in large plastic totes until ready to package
  - A homemade PVC and wood chute was used to get the treats into bags for sale
- A press release was issued advising disposal of any treats made by local manufacturer to prevent additional illnesses

Sequencing results of sampled treats: Day 11

- Sequencing of dog treat isolates completed. Three serotypes were identified among the four samples tested

Source	Product	*Salmonella* serovar	WGS Results
Unopened samples from local co-op	Chicken chips	Infantis	Related to clinical isolates (9-14 allele differences)
	Beef liver chips	Typhimurium	7-11 allele differences between two product samples
	Sweet potato chips		
Sample from case's home	Mixed chicken and sweet potato chips	Schwarzengrund	

Next step: Case finding! Identify if any historical clinical isolates are related to the non-outbreak *Salmonella* Typhimurium and Schwarzengrund strains isolated from treats.

Sequencing of sampled treats: Day 11

	S. Typhimurium	*S.* Schwarzengrund
Source of pet treat isolate(s)	Unopened bags of beef liver chips and sweet potato chips	Opened, mixed bag of chicken and sweet potato treats chips from a case's home
Clinical isolates related by WGS to treat isolate(s)	18 isolates 1-12 allele difference from sampled treats	8 isolates 11-21 allele difference from sampled treats
Timespan of clinical isolates	January 2016 – May 2019	July 2017 – April 2021
Demographics	89% from Essex County	100% from Essex County
Historic case investigation findings	14 out of 16 (88%) with a case investigation completed at the time of infection reported owning a dog	4 out of 7 (57%) with a risk history available were dog owners (risk history not obtained for 1 individual without a clear onset)
Result of 2022 follow-up	6 out of 8 (75%) reinterviewed cases reported exposure to implicated treats	4 out of 5 (80%) reinterviewed cases (4 known dog owners and the individual with no risk history originally collected) reported exposure to implicated treats

Outbreak Conclusion

- The dog treat manufacturer implicated in this 2022 outbreak was tied to historical cases of *Salmonella* Typhimurium and Schwarzengrund spanning 2016-2021, suggesting production of contaminated treats resulting in human illness for years prior to identification by public health
- Business owner closed operations

Reflections from an Epi

- **The LBOH interview of a single case revealed the local exposure that solved the source of this multi-serotype outbreak**
- A one-health approach is essential when conducting enteric case and cluster investigations given the close interaction of humans with dogs and their food, increases in dog ownership over the past decade

Since this outbreak: Questions have been revised in MAVEN that capture pet food exposures.

Thank you to the LBOH(s) involved in this investigation!

Coming soon!
Overhaul of Foodborne Illness (FBI) Complaint Events

Save the Date

BIG changes to foodborne illness complaint reporting

- LBOH webinar: Tuesday, September 9th, 11-12:30
- Presentation will include:
  - Overview of changes made to FBI complaint events in MAVEN
  - Demo of creating an FBI complaint event
  - **New** FBI complaint workflow for LBOHs
  - **New** print template for handing off a complaint to inspectional staff
  - **New** report to extract your jurisdiction's FBI complaint data from MAVEN
  - Review of updated resources for FBI complaint reporting
  - Coming soon:
    - Public-facing, online foodborne illness complaint system
    - Transmission of MAVEN FBI complaint data to METRIK

Q&A