

Massachusetts Department  
of Public Health



# Recreational Water & Animal Contact Exposures: What to Know During Enteric Disease Investigations

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Geena Chiumento, MPH

Nicole E. Medina, MPH

Epidemiologists, Bureau of Infectious Disease and Laboratory Sciences



# Overview

- Existing resources for enterics
- Seasonal reminders
- Enteric diseases associated with animal contact
- Enteric diseases associated with recreational water
- How exposure data are collected in MAVEN
- Outbreak detection and response
  - Example cryptosporidiosis outbreak
- Resources and prevention messaging

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# **Existing Resources for Enterics**

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# 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 Disease Investigations Refresher: Case Interviews and Tips for Success (July 2025) [Slides](#), [Recording](#)
    - Enteric modes of transmission, FAQs, interview tips and tricks
  - Foodborne Illness Complaints (September 2025) [Slides](#), [Recording](#)
    - MAVEN Updates
- **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!

## Tip sheets

- [Foodborne Illness \(FBI\) Complaint Tip Sheet](#)
- Disease-specific: [Campylobacter](#), [Giardia](#), [Norovirus](#), [Salmonella](#), [Shigella](#), [Cryptosporidium](#), [Cyclospora](#), [Listeria](#), [STEC](#), [Vibrio](#), [Yersinia](#)
- [Implementing the Exclusion of Food Handlers with Reportable Conditions](#)

## 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.

<b>1</b> Notification	<ul style="list-style-type: none"><li>• LBOHs have primary responsibility to investigate cases of <i>Salmonella</i> in their jurisdiction. New cases will flow into your "LBOH Notification for Routine Disease" workflow.<ul style="list-style-type: none"><li>◦ 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.</li></ul></li></ul>
<b>2</b> Get Prepared	<ul style="list-style-type: none"><li>• Familiarize yourself with the disease: <a href="#">MDPH Fact Sheets</a>, <a href="#">MDPH Guide to Surveillance</a></li><li>• Review <b>food handler exclusion criteria</b> from 105 CMR 300 for cases and their household contacts. <a href="#">Implementing the Exclusion of Food Handlers with Reportable Conditions</a> 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.<ul style="list-style-type: none"><li>▪ <b>In healthcare:</b> 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.</li><li>▪ <b>In child care programs, schools, and community residential programs:</b> this includes those who prepare food for clients to eat, feed or assist clients in eating, or give oral medications.</li></ul></li><li>• Review demographic and laboratory information available in MAVEN for the case.<ul style="list-style-type: none"><li>◦ <b>Note:</b> 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.<ul style="list-style-type: none"><li>▪ 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.</li><li>▪ For bacteremia or other invasive infections: if case does not report gastrointestinal symptoms, ask them exposure questions prior to the onset of invasive symptoms.</li></ul></li></ul></li></ul>
<b>3</b> Contact Ordering Provider	<ul style="list-style-type: none"><li>• 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</li><li>• During call with provider's office:<ul style="list-style-type: none"><li>◦ Confirm case's contact information, collect additional phone number(s) or email address</li><li>◦ Obtain symptom onset date and clinical presentation</li><li>◦ Collect information on any potential exposures identified during visit (e.g., travel)</li><li>◦ Request case's occupation and employer, if available</li><li>◦ Ask if the case has been informed of their diagnosis</li></ul></li><li>• If the ordering provider cannot be reached in a timely manner, proceed to case interview.</li></ul>
<b>4</b> Contact Case	<ul style="list-style-type: none"><li>• Introduce yourself, why you are calling, what you will use information for, and who has access to the information they provide.</li><li>• Complete all questions in the Demographic and Clinical question packages.</li><li>• Complete all questions in the Risk/Exposure question package for the <b>7 days prior to symptom onset</b>.<ul style="list-style-type: none"><li>◦ 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.</li></ul></li></ul>

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# **Seasonal Enteric Disease Reminders**

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# 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

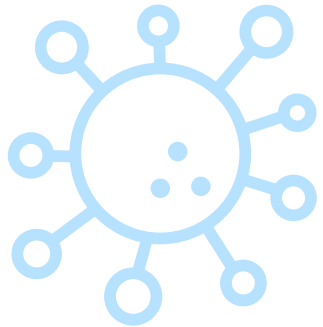


- Can be transmitted via food, water, animal contact, person-to-person, and environmental contamination.



- Causes an estimated 48 million illnesses (1 in 6 Americans!) and 3,000 deaths annually in the United States

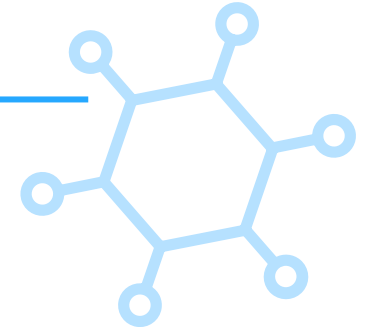
# Reportable Enteric Diseases



## Bacteria

Botulism  
Campylobacteriosis  
Listeriosis  
Shiga toxin-producing *E. coli* (STEC)

Salmonellosis  
Shigellosis  
Vibriosis  
Yersiniosis



## Parasites

Amebiasis  
Cryptosporidiosis

Cyclosporiasis  
Giardiasis

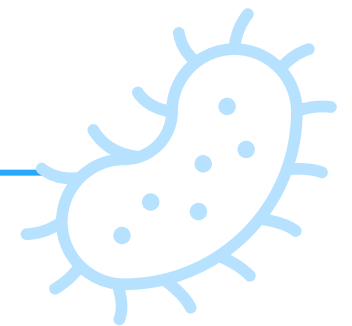
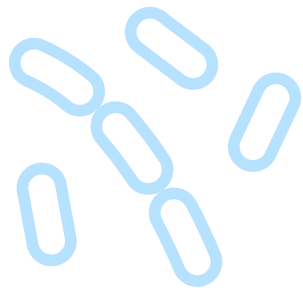
## Viruses

Norovirus  
Hepatitis A

## Toxins

Foodborne illness due to toxins (including mushroom toxins, ciguatera toxins, scombrototoxin, 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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[Email](#)
[Print](#)

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 foodborne organisms shown below pose grave threats to *all* pe

#### 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
<i>Bacillus cereus</i>	<i>B. cereus</i> food poisoning	10-16 hrs	Abdominal cramps, watery diarrhea, nausea	24-48 hours	Meats, stews, gravies, vanilla sauce
<i>Campylobacter jejuni</i>	Campylobacteriosis	2-5 days	Diarrhea, cramps, fever, and vomiting; diarrhea may be bloody	2-10 days	Raw and undercooked poultry, unpasteurized milk, contaminated water
<i>Clostridium botulinum</i>	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
<i>Clostridium perfringens</i>	Perfringens food poisoning	8-16 hours	Intense abdominal cramps, watery diarrhea	Usually 24 hours	Meats, poultry, gravy, dried or precooked foods, lime and/or temperature-abused foods
<i>Cryptosporidium</i>	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
<i>Cyclospora cayentensis</i>	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)

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

## FoodSafety.gov Food Poisoning: Bacteria and Viruses

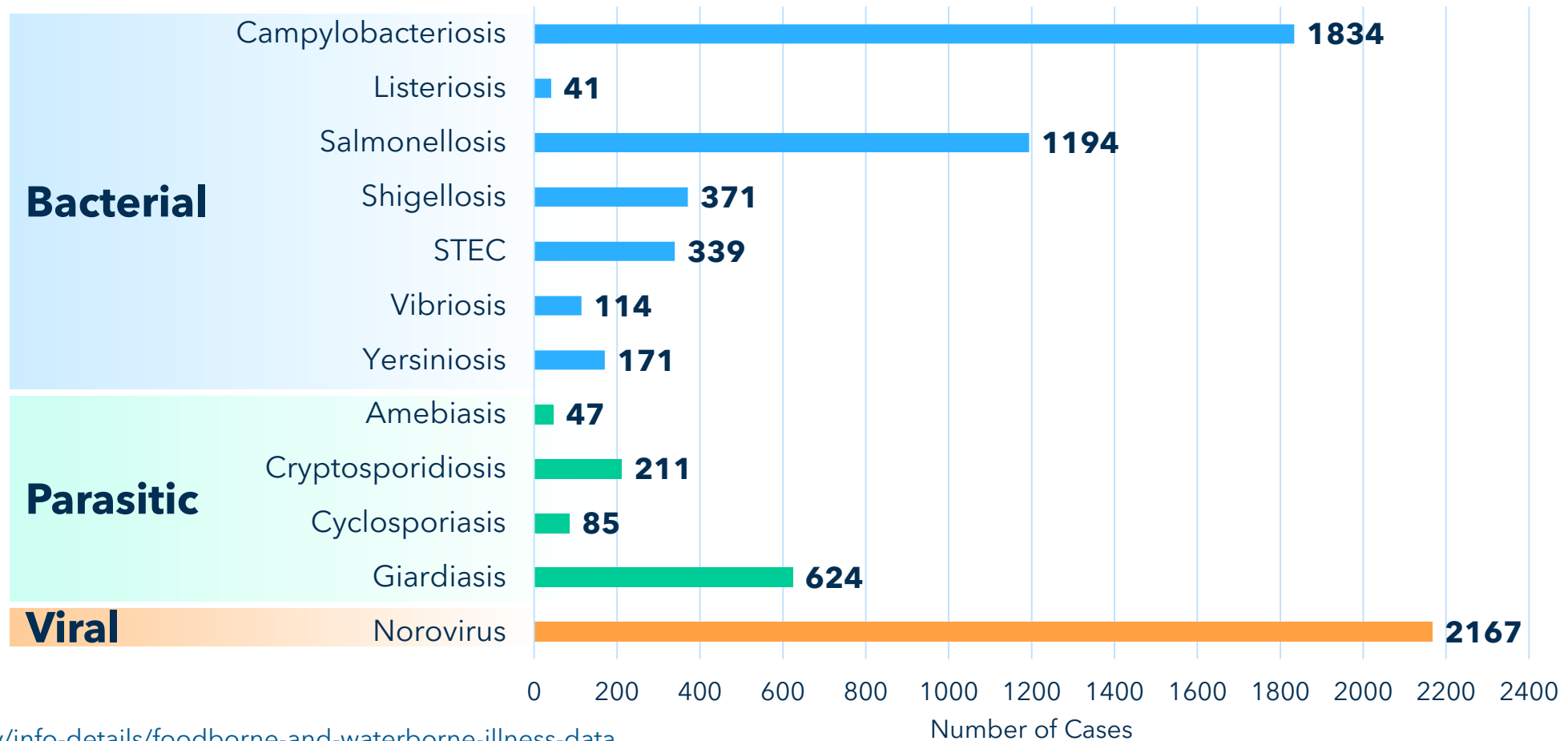
### Salmonella

Download Table as PDF

<b>Sources</b>	<p><b>Food:</b> A variety of foods have been linked to Salmonella, including vegetables, chicken, pork, fruits, nuts, eggs, beef and sprouts.</p> <p><b>Animals and their environments:</b> Particularly reptiles (snakes, turtles, lizards), amphibians (frogs), birds (baby chicks) and pet food and treats.</p>
<b>Incubation period</b>	6 hours to 6 days
<b>Symptoms</b>	Diarrhea, fever, stomach cramps, vomiting
<b>Duration of illness</b>	4 to 7 days
<b>What to do</b>	<p>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.</p> <p>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).</p>
<b>Prevention</b>	<ul style="list-style-type: none"> <li>Avoid eating high-risk foods, including raw or lightly cooked eggs, undercooked ground beef or poultry, and unpasteurized (raw) milk.</li> <li>Wash your hands after contact with animals, their food or treats, or their living environment.</li> </ul>

# Enteric Disease Cases in MA

Average Number of Enteric Disease Cases Reported Annually in MA, 2023-2025

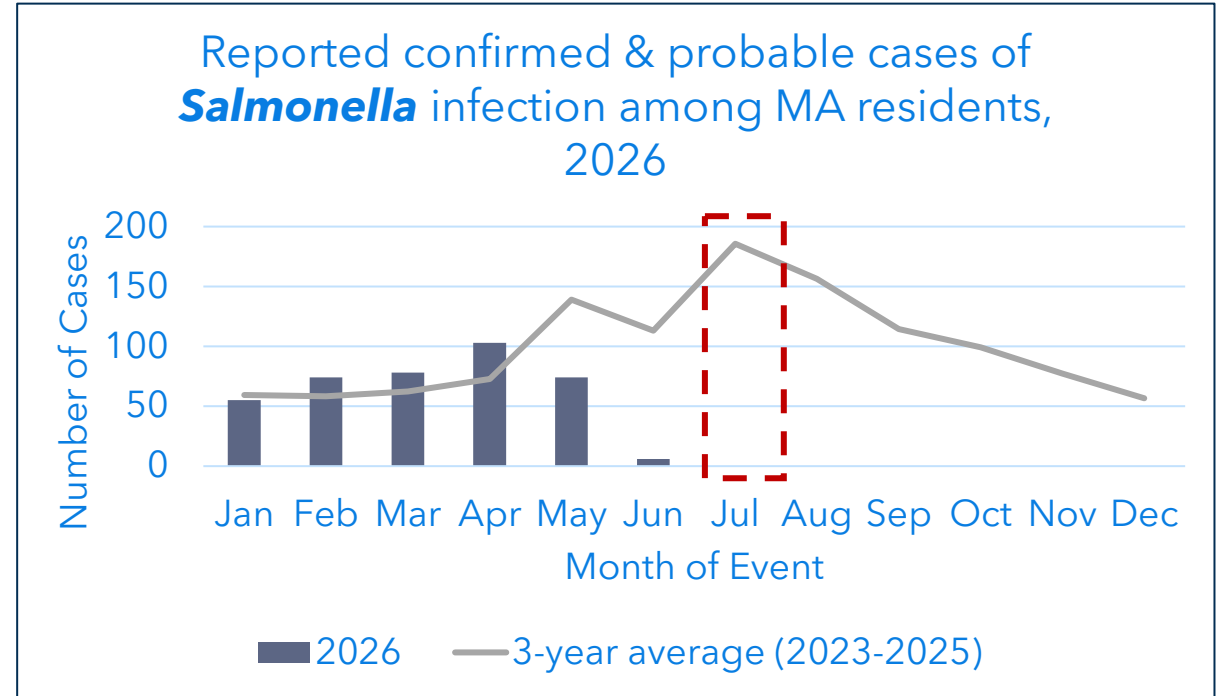
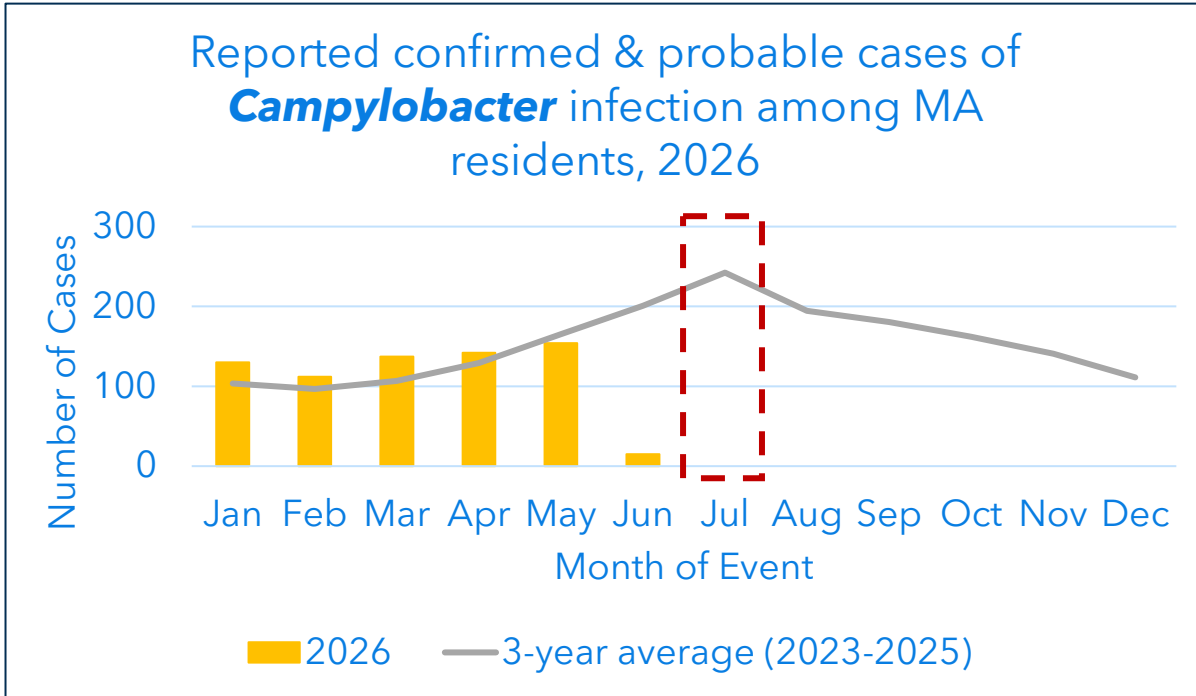


<https://www.mass.gov/info-details/foodborne-and-waterborne-illness-data>

Data are current as of 5/1/2026 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!



Data source: Bureau of Infectious Disease and Laboratory Sciences.  
Data are current as of 6/5/2026 and are subject to change.

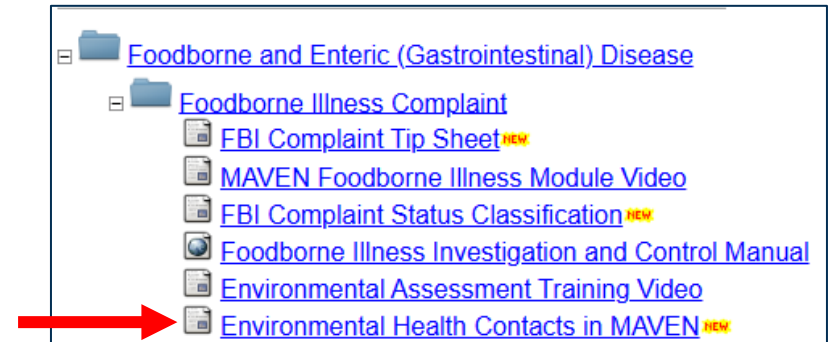
# Reminder: Environmental Health Contacts in MAVEN

**If you haven't yet, please add or update your town's environmental health contacts to your town's Communication Event in MAVEN!**

Environmental Health Contacts					
First Name	Last Name	Title	Email	Phone	Mobile Phone
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Allows DPH Division of Food Protection staff to quickly identify who should be contacted for:

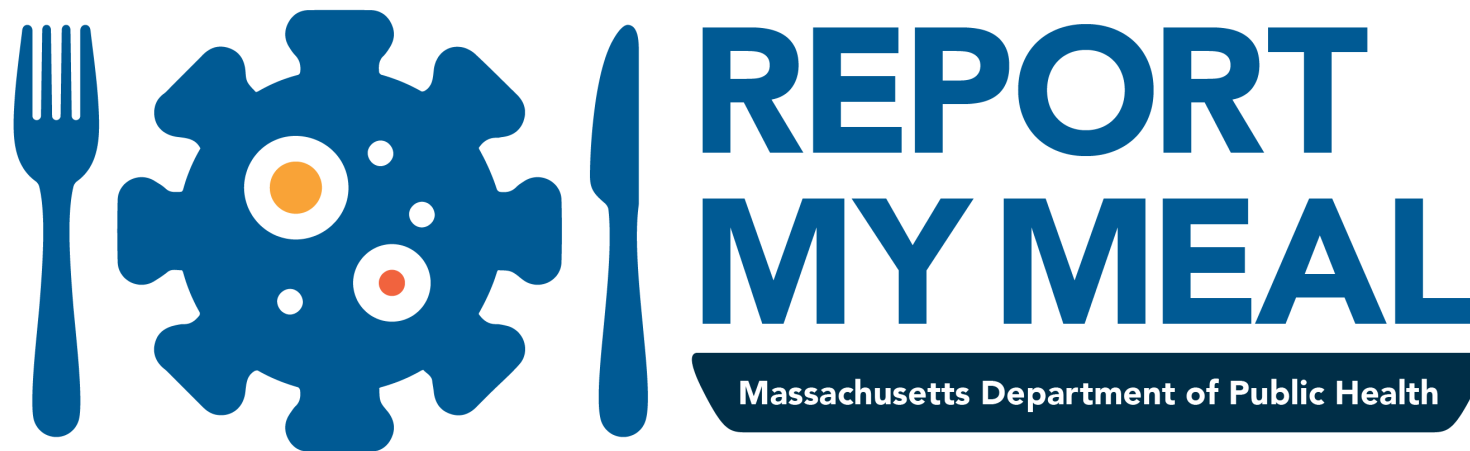
- Foodborne illness complaints involving one person
- Suspected foodborne illness outbreaks
- Food traceback requests
- Recall audit checks
- Complaints involving retail food establishments with no illness



[Guidance on adding environmental health contacts in MAVEN Communication Events](#)

# Report My Meal

In December 2025, DPH launched a new online system for reporting suspected foodborne illness to state and local health officials called **Report My Meal**: [mass.gov/ReportMyMeal](https://mass.gov/ReportMyMeal)



# Report My Meal: Spread the Word!

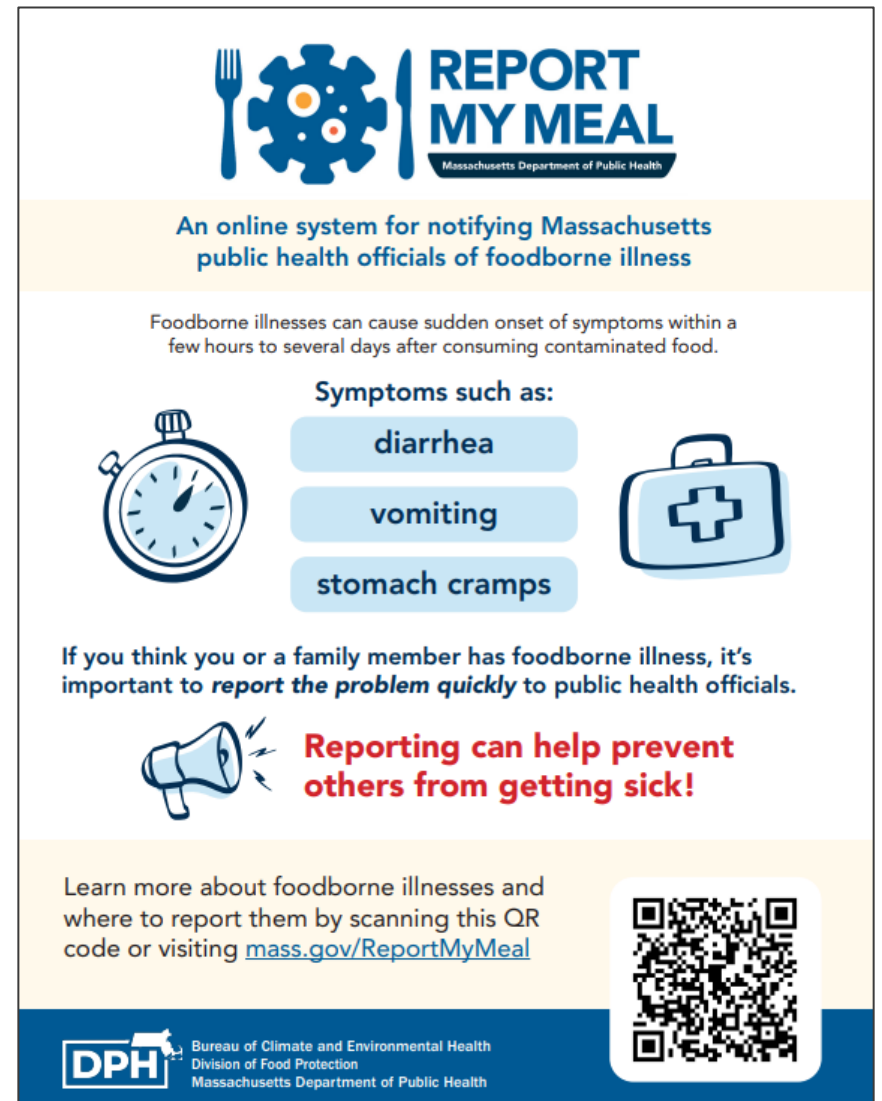
Help spread the word about **Report My Meal** by:

- Promoting on your town's social media pages.

- Posting flyers in your community.

A flyer can be found at the bottom of the webpage, [mass.gov/ReportMyMeal](https://mass.gov/ReportMyMeal)  
(Available in 10 different languages!)

- Encouraging clinicians and medical offices in your town to share information about Report My Meal with patients experiencing symptoms of foodborne illness



The flyer features the 'REPORT MY MEAL' logo at the top, which includes a fork, a gear with a virus-like center, and a knife. Below the logo is the text 'REPORT MY MEAL' and 'Massachusetts Department of Public Health'. The main body of the flyer is white with a yellow header and footer. The header text reads: 'An online system for notifying Massachusetts public health officials of foodborne illness'. The main text explains that foodborne illnesses can cause sudden onset of symptoms and lists symptoms: diarrhea, vomiting, and stomach cramps. It includes icons for a stopwatch, a first aid kit, and a megaphone. A QR code is located in the bottom right corner, and the footer contains the DPH logo and contact information for the Bureau of Climate and Environmental Health, Division of Food Protection, Massachusetts Department of Public Health.

**REPORT MY MEAL**  
Massachusetts Department of Public Health

An online system for notifying Massachusetts public health officials of foodborne illness

Foodborne illnesses can cause sudden onset of symptoms within a few hours to several days after consuming contaminated food.

Symptoms such as:

- diarrhea
- vomiting
- stomach cramps

If you think you or a family member has foodborne illness, it's important to **report the problem quickly** to public health officials.

**Reporting can help prevent others from getting sick!**

Learn more about foodborne illnesses and where to report them by scanning this QR code or visiting [mass.gov/ReportMyMeal](https://mass.gov/ReportMyMeal)

**DPH** Bureau of Climate and Environmental Health  
Division of Food Protection  
Massachusetts Department of Public Health

# Webinar FYI: *Legionella* in LTCFs

## ***Water You Waiting For? Tackling Legionella in Long-Term Care*** **6/16/2026 12 pm - 1 pm** **[Register HERE](#)**

Webinar will cover:

- Overview of *Legionella*
- Risk of transmission in healthcare settings
- How risk can be mitigated through effective control measures
- What a healthcare-associated Legionnaires' disease investigation entails

\*Webinar is geared towards LTCFs but LBOH are welcome to attend!

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# **Enteric Diseases Associated with Animal Contact**

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# Bacterial Pathogens Associated with Animal Contact

Pathogen	Incubation Period	Common Animal Source	Key Points
<b>Salmonella</b> ( <i>Salmonella</i> spp.)	Range of 6 hours to 6 days	<ul style="list-style-type: none"> <li>• Poultry</li> <li>• Reptiles</li> <li>• Backyard flocks</li> </ul>	<ul style="list-style-type: none"> <li>• Can be carried by healthy animals</li> <li>• Leading cause of animal-associated outbreaks</li> </ul>
<b>Campylobacteriosis</b> ( <i>Campylobacter</i> spp.)	Typically, 2 to 5 days; range of 2 to 10 days	<ul style="list-style-type: none"> <li>• Poultry</li> <li>• Puppies</li> <li>• Livestock</li> </ul>	<ul style="list-style-type: none"> <li>• Common cause of diarrhea</li> <li>• Increasingly linked to pet exposure</li> </ul>
<b>Shiga toxin-producing <i>E. coli</i></b> (STEC) ( <i>E. coli</i> O157 & non-O157)	Typically, 3 to 4 days; range of 1 to 10 days	<ul style="list-style-type: none"> <li>• Cattle</li> <li>• Petting zoos</li> <li>• Farm animals</li> </ul>	<ul style="list-style-type: none"> <li>• Very low infectious dose</li> <li>• Can cause severe illness (HUS)</li> <li>• Often associated with cattle/farm animal contamination</li> </ul>
<b>Yersiniosis</b> ( <i>Yersinia</i> spp.)	Typically, 4 to 6 days; range of 1 to 14	<ul style="list-style-type: none"> <li>• Swine</li> <li>• Other livestock</li> </ul>	<ul style="list-style-type: none"> <li>• Associated with animal contact</li> </ul>

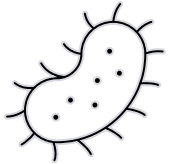
# Parasitic Pathogens Associated with Animal Contact

Pathogen	Incubation Period	Animal Source	Key Points
<b>Cryptosporidiosis</b> <i>(Cryptosporidium spp.)</i>	Typically, 7 days; range of 2 to 10 days	<ul style="list-style-type: none"> <li>• Calves</li> <li>• Young livestock</li> <li>• Farm environments</li> </ul>	<ul style="list-style-type: none"> <li>• Highly resistant in the environment</li> <li>• Common in farm visits/petting zoos</li> <li>• Alcohol-based hand sanitizers are not effective</li> </ul>
<b>Giardiasis</b> <i>(Giardia duodenalis)</i>	Range of 1 to 3 weeks	<ul style="list-style-type: none"> <li>• Livestock</li> <li>• Pets</li> <li>• Contaminated water</li> <li>• Animal-contaminated environments (feces, soil)</li> </ul>	<ul style="list-style-type: none"> <li>• Causes prolonged illness</li> <li>• Spread via contaminated water/feces</li> </ul>
<b>Amebiasis</b> <i>(Entamoeba histolytica)</i>	Typically, 2 to 4 weeks; can range from a few days to months or years.	<ul style="list-style-type: none"> <li>• Pigs</li> <li>• Cattle</li> <li>• Sheep</li> <li>• Goats</li> <li>• Horses</li> </ul>	<ul style="list-style-type: none"> <li>• Pigs most often linked to animal-to-human transmission</li> <li>• Contaminated food/water</li> <li>• Poor sanitation</li> </ul>

[Diseases that Can Spread Between Animals and People | CDC](#)

# Why Animal Contact Matters

## Animals may carry enteric pathogens without looking sick.



### Fecal-Oral Transmission

- Feces or droppings
- Fur, feathers, skin, or shells
- Contaminated surfaces and environments (barns, cages, bedding, soil, water bowls)
- Pet food and pet treats

### Common High-Risk Settings

- Farms and fairs
- Petting zoos
- Private homes/farms
- Workplace (i.e., pet stores, vet office)



### Who is Most at Risk

- Young children
- Pregnant people
- Older adults
- Immunocompromised individuals



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# **Enteric Diseases Associated with Recreational Water**

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# Key Enteric Pathogens in Water

Pathogen	Incubation Period	Water Source/Exposure	Key Points
<b>Salmonella</b> ( <i>Salmonella</i> spp.)	Range of 6 hours to 6 days	<ul style="list-style-type: none"> <li>Contaminated water (lakes, pools)</li> <li>Fecal contamination from swimmers or runoff</li> </ul>	<ul style="list-style-type: none"> <li>Transmitted via ingestion of contaminated water</li> <li>Can survive in water environments for days</li> </ul>
<b>Campylobacteriosis</b> ( <i>Campylobacter</i> spp.)	Typically, 2 to 5 days; range of 2 to 10 days	<ul style="list-style-type: none"> <li>Natural Bodies of water (lakes, streams)</li> <li>Animal fecal contamination (runoff)</li> </ul>	<ul style="list-style-type: none"> <li>Linked to untreated natural water</li> <li>Often from animal fecal run off</li> <li>Low infectious dose</li> </ul>
<b>Shigellosis</b> ( <i>Shigella</i> spp.)	Typically, 1 to 3 days; range of 1 to 7 days	<ul style="list-style-type: none"> <li>Contaminated pools/splash pads</li> <li>Person-to-person transmission in the water</li> </ul>	<ul style="list-style-type: none"> <li>Spreads easily in pools/splash pads</li> <li>Person-to-person is common in aquatic settings</li> <li>Can cause outbreaks in recreational water venues</li> </ul>
<b>Shiga toxin-producing E. coli</b> (STEC) ( <i>E. coli</i> O157 & non-O157)	Typically, 3 to 4 days; range of 1 to 10 days	<ul style="list-style-type: none"> <li>Contaminated recreational water (lakes, pools, splash pads)</li> <li>Animal/agricultural runoff</li> <li>Fecal Contamination of water sources</li> </ul>	<ul style="list-style-type: none"> <li>Very low infectious dose</li> <li>Can cause severe illness (HUS)</li> <li>Often associated with cattle/farm animal contamination</li> </ul>

[Nationally Notifiable Waterborne Diseases | CDC](#)

# Key Enteric Pathogens in Water

Pathogen	Incubation Period	Water Source/Exposure	Key Points
<b>Vibriosis</b> <i>(Vibrio spp.)</i>	<ul style="list-style-type: none"> <li>24 hours (gastroenteritis) with a range of 5-92 hours</li> <li>1-7 days (wound infection and septicemia)</li> </ul>	<ul style="list-style-type: none"> <li>Warm coastal saltwater</li> <li>Brackish water/estuaries</li> <li>Open wound exposure to seawater</li> <li>Raw or undercooked shellfish (especially oysters)</li> </ul>	<ul style="list-style-type: none"> <li>Higher risk in warm months</li> <li>Associated with coastal and marine environments</li> <li>Can cause: GI illness and wound infections</li> <li>Increased risk for those with liver disease and immunocompromised people</li> </ul>
<b>Cryptosporidiosis</b> <i>(Cryptosporidium spp.)</i>	Typically, 7 days; range of 2 to 10 days	<ul style="list-style-type: none"> <li>Pools, splash pads, water parks</li> <li>Contaminated recreational water</li> </ul>	<ul style="list-style-type: none"> <li>Highly chlorine-resistant</li> <li>Prolonged shedding</li> <li>Low infectious dose</li> </ul>
<b>Giardiasis</b> <i>(Giardia spp.)</i>	Range of 1 to 3 weeks	<ul style="list-style-type: none"> <li>Untreated natural water (lakes, streams)</li> <li>Contaminated recreational water</li> <li>Fecal contamination from humans or animals</li> </ul>	<ul style="list-style-type: none"> <li>Often associated with camping/hiking</li> <li>Common cause of waterborne diarrhea</li> <li>Forms hardy cysts and can survive in lakes and streams</li> <li>Can be resistant to normal chlorination</li> </ul>

# Why Recreational Water Contact Matters

Contact with natural or man-made water during recreation can expose you to germs



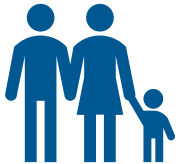
## Transmission

- Ingestion of contaminated water
- Water entering nose, mouth, or eyes
- Open cuts or wounds exposed to water



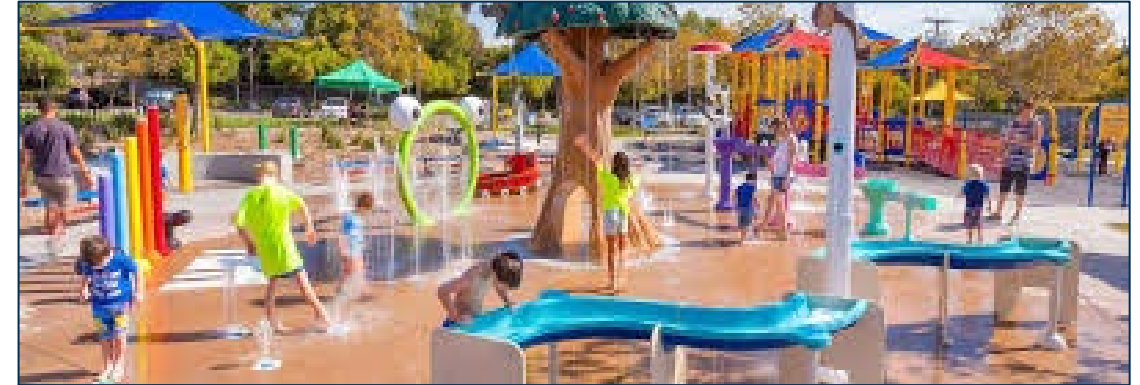
## Common High-Risk Settings

- Freshwater lakes, rivers, ponds,
- Ocean/saltwater beaches
- Chlorinated or treated swimming pools, water parks, and splash pads
- Boating and water sports



## Who is Most at Risk

- Young children
- Older adults
- Pregnant people
- Immunocompromised individuals



# Let's Not Forget About Drinking Water



## Contaminated drinking water can spread disease!



### Sources of Contamination

- Animal or human fecal contamination
- Untreated private wells
- Flooding and storm runoff
- Water treatment failures
- Aging infrastructure



### Prevention

- Follow boil water advisories
- Use certified filters or bottled water when needed
- Practice good hand hygiene

### High-Risk Exposures

- Brushing teeth
- Making ice
- Washing produce
- Preparing infant formula
- Giving tap water to pets
- Swallowing water during showering/bathing
- Tap water in coffee makers, humidifiers, CPAP



### Who is Most at Risk

- Young children
- Older adults
- Pregnant people
- Immunocompromised individuals

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# **Collecting Animal Contact and Recreational Water Exposure Data**

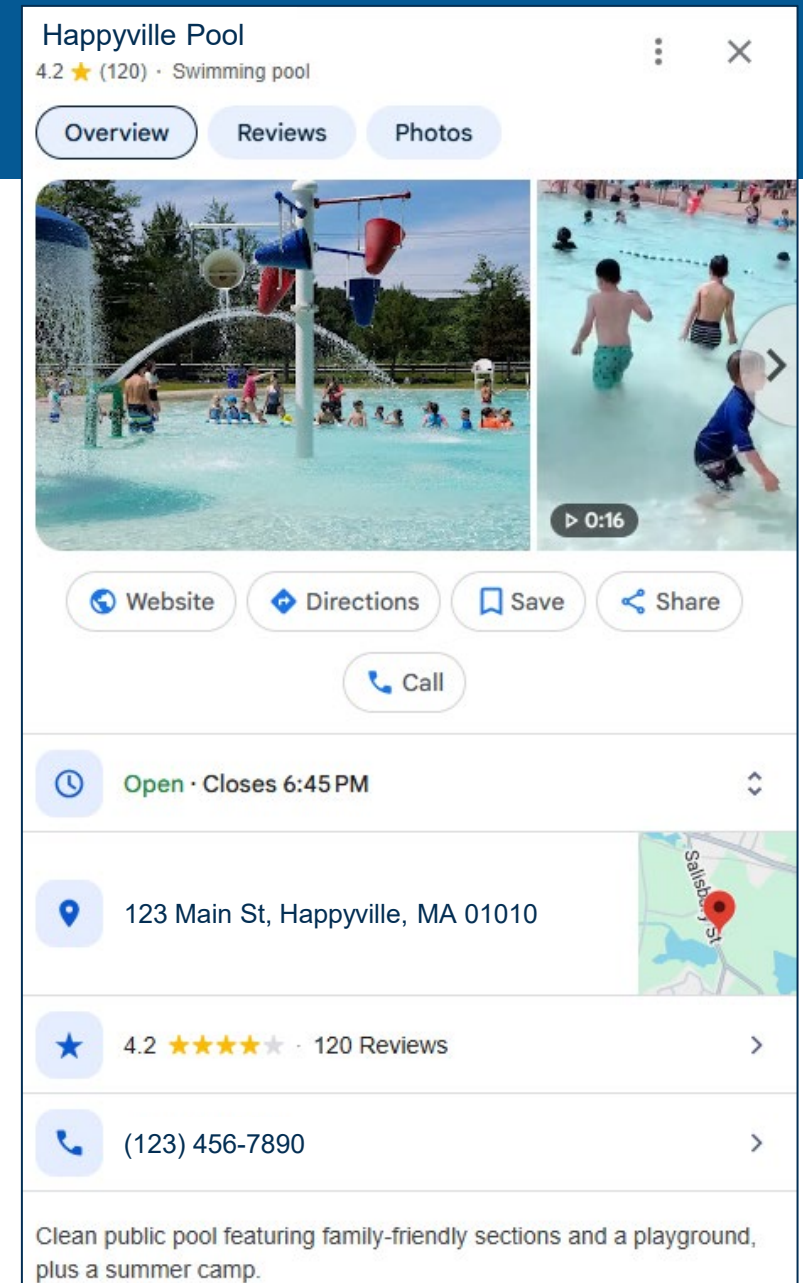
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# Risk/Exposure Questions in MAVEN

- ✓ Questions are always found in the Risk/Exposure Question Package and standardized across select enteric disease events
- ✓ Animal contact and recreational water questions do not need to be asked if the case spent their entire incubation period outside of the US
- ✓ For domestic exposures (in the US): ensure exposure took place within pathogen's incubation period or time period of interest

# Tips for Case Interview

- Collect **ALL** exposure details (location, date(s), etc.) just like you would for foodborne illness!
  - Collect for any/all domestic exposures (in MA and US)
  - Complete details helps with outbreak detection
- Consider using Google or other search engine to confirm names and locations of exposures/farms/venues before documenting



# Case Interview

- If case's recall is poor, help them by asking review of:
  - Personal calendar for planned outings and events
  - Photos on phone
  - Review of credit card statement (from ticket or food purchase)



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# **Animal Contact Exposure Data in MAVEN**

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# Animal Contact Questions in MAVEN

Did the case visit, work, live, or volunteer on farm, ranch, petting zoo, or other setting that has animals, including reptiles, amphibians, or birds?  
Yes

**Add New**

Name and location (address, city/town, state)  
Happy Farmland for Kids, 123 Main St, Happyville, MA

Date(s):  
5/1/26 and 5/2/26

Specify animal type(s) at the location, regardless of direct contact:

- Amphibian
- Bird
- Cat
- Chicken
- Cow
- Dog
- Goat
- Horse
- Pig
- Reptile
- Rodent
- Sheep
- Turkey
- Other
- Unknown

Specify bird type(s):  
duckling

Specify reptile type(s):  
iguana

Other (specify):  
bunnies

**Assesses potential exposures to animals and their surroundings at farms, ranches, petting zoos, etc.**

Details on where and when exposure occurred - should be within pathogen's incubation period!

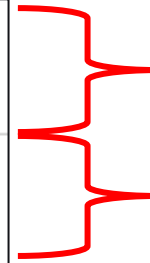
Specify what type(s) of animals were present in the setting, regardless of direct contact

- Selection of some animals will prompt you to specify type

**Click "Add New" to add another exposure during incubation period**

# Animal Contact Questions in MAVEN

Any contact with farm animal(s)? <input type="text" value="Yes"/>
Did the animal have loose stools? <input type="text" value="Yes"/>



Ask whether the case had direct contact with the animal(s)

Ask whether the animal(s) had loose stools

Additional details on the type of direct contact with animals (pet or held, kissed, fed, etc.) can be added to the Notes section in the MAVEN event.

# Animal Contact Questions in MAVEN

Any contact with household pets (e.g., cats, dogs, backyard chickens, rodents, reptiles, pets in aquariums)?

Yes

Specify animal type:

2 cats and a gecko

Did pet have loose stools?

Yes

**Assesses exposures to household pets**

Specify what type(s) of animals

Ask whether the animal(s) has loose stools

## Assesses exposures to pet food, treats, and chews

Exposure to pet food, pet treats, or chews (e.g. pig ears, rawhide chews)? Please include all pet foods and treats directly handled by the case, as well as those fed to household pets that were not directly handled.

Yes

Specify type of pet food:

Hill's Science Diet kitten food, mealworms

Specify type/brand of food, treats, chews

# Animal Contact Questions in MAVEN

These questions are in the following disease events:

- Amebiasis
- Campylobacteriosis
- Cryptosporidiosis
- Giardiasis
- Salmonellosis
- Shiga toxin-producing *E coli*
- Yersiniosis

---

# **Recreational Water Exposure Data in MAVEN**

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# Recreational Water Questions in MAVEN

Any exposure to recreational water (e.g., pool, water park, lake) during incubation period?

Yes

**Add New**

Name and location (address, city/town, state)

MA State Pool, 123 Main St, Happyville, MA

Date(s):

6/5/26

Recreational water type:

- Swimming pool
- Fresh water
- Hot spring
- Hot tub or whirlpool
- Recreational water park
- Interactive water fountain (e.g., splash pad)
- Ocean
- Water slide
- Float tank
- Other

Swimming pool type:

- School/college/university pool
- Camp pool
- Hospital/therapy pool
- Hotel/motel/resort vacation pool
- Kiddie/wading pool
- Municipal/community pool
- Neighborhood/subdivision/apartment/condo pool
- Private club/membership pool
- Private home pool not a kiddie/wading pool
- Unknown
- Other

**Assesses potential exposures to recreational water sources**

Details on where and when exposure occurred - should be within pathogen's incubation period!

Specify what type(s) of recreational water at the specified location

For swimming pools only: specify type(s) of swimming pool

**Click "Add New" to add another exposure during incubation period**

# Recreational Water Questions in MAVEN

This question is in the following disease events:

- Campylobacteriosis → **NEW** as of February 2026 to align with the [2025 CSTE Campylobacter Position Statement](#)
- Cryptosporidiosis
- Salmonellosis → **NEW** as of February 2026 to align with the [2024 CSTE Salmonella Brief](#)
- Shigellosis
- Giardiasis (*coming June 2026*)

**Council of State and Territorial Epidemiologists (CSTE):** CSTE [position statements](#) and briefs help define and standardize disease-specific case definitions and data elements to be collected during investigations conducted across all state, Tribal, local, and territorial (STLT) jurisdictions.

# For Crypto Only: Exposures AFTER Symptoms

Any exposure to recreational water (e.g., pool, water park, lake) after symptom onset?  
Yes

**+ Add New**

Name and Location (address, city/town, state)  
Sunnyside Motel, 123 Main St, Happyville, MA

Date(s):  
8/4/25 - 8/10/25

Recreational water type

- Swimming pool
- Fresh water
- Hot spring
- Hot tub or whirlpool
- Recreational water park
- Interactive water fountain (e.g., splash pad)
- Ocean
- Water slide
- Float tank
- Other

Swimming pool type:

- School/college/university pool
- Camp pool
- Hospital/therapy pool
- Hotel/motel/resort vacation pool
- Kiddie/wading pool
- Municipal/community pool
- Neighborhood/subdivision/apartment/condo pool
- Private club/membership pool
- Private home pool not a kiddie/wading pool
- Unknown
- Other

Did the case experience diarrhea while in recreational water?  
Yes

Assesses exposures to recreational water sources AFTER symptom onset

Details on where and when exposure occurred (should be AFTER onset!)

Specify what type(s) of recreational water at the specified location

For swimming pools only: specify type(s) of swimming pool

Diarrheal incident?

Click "Add New" to add another exposure AFTER symptom onset

# For Crypto Only: Exposures AFTER Symptoms

- **Cryptosporidiosis cases should wait 2 weeks after diarrhea resolves before participating in recreational water activities**
- *Cryptosporidium* can live in properly treated water for days.
  - A diarrheal incident is a higher-risk event than a formed fecal incident.
- If case reports exposure to recreational water after symptom onset, further follow up may be warranted at the water venue

Germ	Time to kill or inactivate in chlorinated water
<i>E. coli</i> O157:H7	Less than 1 minute
Hepatitis A	About 16 minutes
<i>Giardia</i> spp.	About 45 minutes
<i>Cryptosporidium</i> spp.	About 15,300 minutes or 10.6 days

[What to Do When There is Poop in the Pool | Healthy Swimming | CDC](#)

# Drinking Water Questions in MAVEN

Main source of drinking water:

- Common well ✓
- Any well
- Bottled water
- Common well
- Municipal or city or county
- Other
- Private well
- Unknown
- Untreated surface water

**Assesses main source of drinking water**

Any drinking of untreated surface water (such as from lakes, streams, etc.)?

Yes

Describe:

went camping at State Forest on 7/18 and drank from stream

**Assesses exposures to untreated surface water**

Details on what the exposure was and when and where it occurred should be obtained

# Drinking Water Questions in MAVEN

These questions are in the following disease events:

- Campylobacteriosis
- Cryptosporidiosis
- Salmonellosis
- Shiga toxin-producing *E coli*
- Shigellosis
- Yersiniosis

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# **Outbreak Detection and Response**

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# What is an Outbreak?



**Two or more individuals from different households who are ill with similar symptoms after a common exposure**

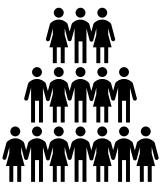


**Individuals do not need to have a diagnosis**

**Not always clear cut as to how illness was acquired**



- For recreational water exposures: sometimes unclear if illness was acquired from the water, environmental contamination on the beach, etc.
- For animal contact exposure: not always clear what animal(s) could have led to illness



**The outbreak investigation will help identify how the illness occurred!**

# Data Review by DPH Epis

Ongoing monitoring is done by DPH to detect potential outbreaks and inform public health actions.

## Animal Contact Report (ACR)



Since 2017



Run twice a month

### Includes

Amebiasis, Campylobacteriosis, Cryptosporidiosis, Giardiasis, Salmonellosis, Shiga toxin-producing organisms, and Yersinosis.



## Waterborne Exposure (WBE) Report



Since April 2025



June 1-Sept 30 run weekly  
Oct 1-May 31 run twice a month

### Includes

Campylobacteriosis, Cryptosporidiosis, Salmonellosis, and Shigella

# Data Review by DPH Epis (continued)



## Shared Exposure Venue

- Multiple cases reporting the same venue or activity (e.g., farm, petting zoo, fair, pool, waterpark, splash pad, lake etc.)
- A shared venue may link otherwise unrelated cases.



## Exposure aligns with the pathogen

- Determine if exposure is commonly associated with pathogen
- If the pathogen and the exposure don't typically align, the exposure may be unrelated or require additional investigation.
- Review tip sheets and MAVEN event to guide interview and identify relevant exposures.



## Exposure falls within the incubation period.

- Compare exposure dates to symptom onset based on expected incubation period.
- Exposures reported outside the incubation period (e.g., 3-weeks before symptom onset) are less likely to be associated with illness.



## Atypical Scenarios

- Occupational, educational, volunteer, traveling animal shows

***All this information helps us recognize trends, connect cases, and identify potential outbreaks as early as possible.***

# Collecting Key Exposure Information

## INCOMPLETE DETAILS

- Visited a farm in NH
- About 2 weeks ago
- Visited petting area
- Not sure of the name
- Not sure of the exact date
- Don't know if my friends I went with got sick

## SUFFICIENT DETAILS

- **Visited** Jones Family Farm 123 Main St. Jackson, NH
- **Dates:** May 2, 2026, from 11:00AM-4:00PM
- **Activities:** Hand-fed baby goats, petted calves, visited petting area, can't recall if hands were washed before eating.
- **Symptom onset:** May 6, 2026, diarrhea & fever
  - 2 adults and 3 kids attended. The 2 adults were friends that brought their children to the farm.
  - 3 children all developed symptoms.

# Do I need to notify DPH about animal contact or water exposures?

**Early reporting supports a coordinated public health response!**



## **Notify DPH When**

Exposures suggest a shared exposure or possible outbreak

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## **Two or more linked enteric illness cases**

Identify and report a shared exposure.



## **Shared exposure identified**

e.g., same farm, event, animal or water source



## **Severe illness or hospitalization**

Indicates higher risk and need for prompt review

# Do I need to notify other towns about animal contact or water exposures?



**For single cases (not suggestive of an outbreak),** notification to the jurisdiction where exposure took place is **not** needed.



**For multiple cases (or a situation suggestive of an outbreak),** notification to the jurisdiction where exposure took place is **optional**.

DPH will already notify and work with the jurisdiction where multiple exposures occurred when an outbreak is suspected or detected.

# State Partners During Outbreak Investigations

Department of  
Public Health

Bureau of Infectious Disease and Laboratory  
Sciences

Division of Epidemiology

Bureau of Climate and Environmental Health

Division of Environmental Toxicology, Hazard  
Assessment, and Prevention (TOX)

**Bathing beaches, CyanoHABs**

Division of Environmental Health Regulations  
and Standards

**Pools**

Department of  
Conservation and  
Recreation

Bureau of Pool & Waterfront Safety

**DCR-run beaches and pools**

Department of  
Agricultural  
Resources

Division of Animal Health

**Animal contact**

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# **Cryptosporidiosis Outbreak Investigation**

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# Cryptosporidiosis Outbreak Overview



## # of Cases

confirmed and suspect cases



## Timeline of Spread

When cases occurred over time



## Transmission

Likely modes of transmission



## Public Health Response

Public health actions taken



## Public Health Partners

Public health agencies notified



## Recommendations

Prevention and next steps



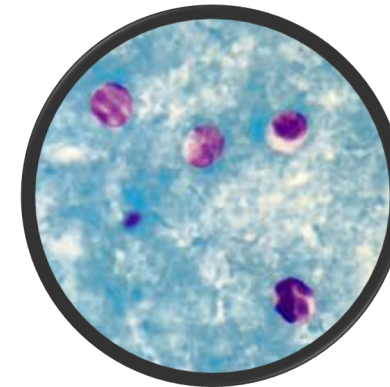
Recreational Water  
(swimming)



Drinking Contaminated water



Contaminated Surfaces



Person-to-Person Contact



Animal Contact  
(Direct or near animals)



Contaminated Food

# An Outbreak is Detected



A LBOH calls the Epi Line to report 2 cases of cryptosporidiosis in their jurisdiction who reported exposures to multiple animals at a local children's farm around the same time

- One case was a child
- One case was a farm employee that cared for animals

*If the two cases were not from the same town or region, DPH's Animal Contact Report would ideally have identified the common exposure!*



Research into local farm revealed many opportunities for visitors to interact directly with multiple types of animals



Additional cases are detected through enteric disease investigations and notifications from other states with cases who reported visiting the farm

# Case Summary



**11**  
Total Cases



**8/11**  
Laboratory-Confirmed



**2-31**  
Age Range (Years)

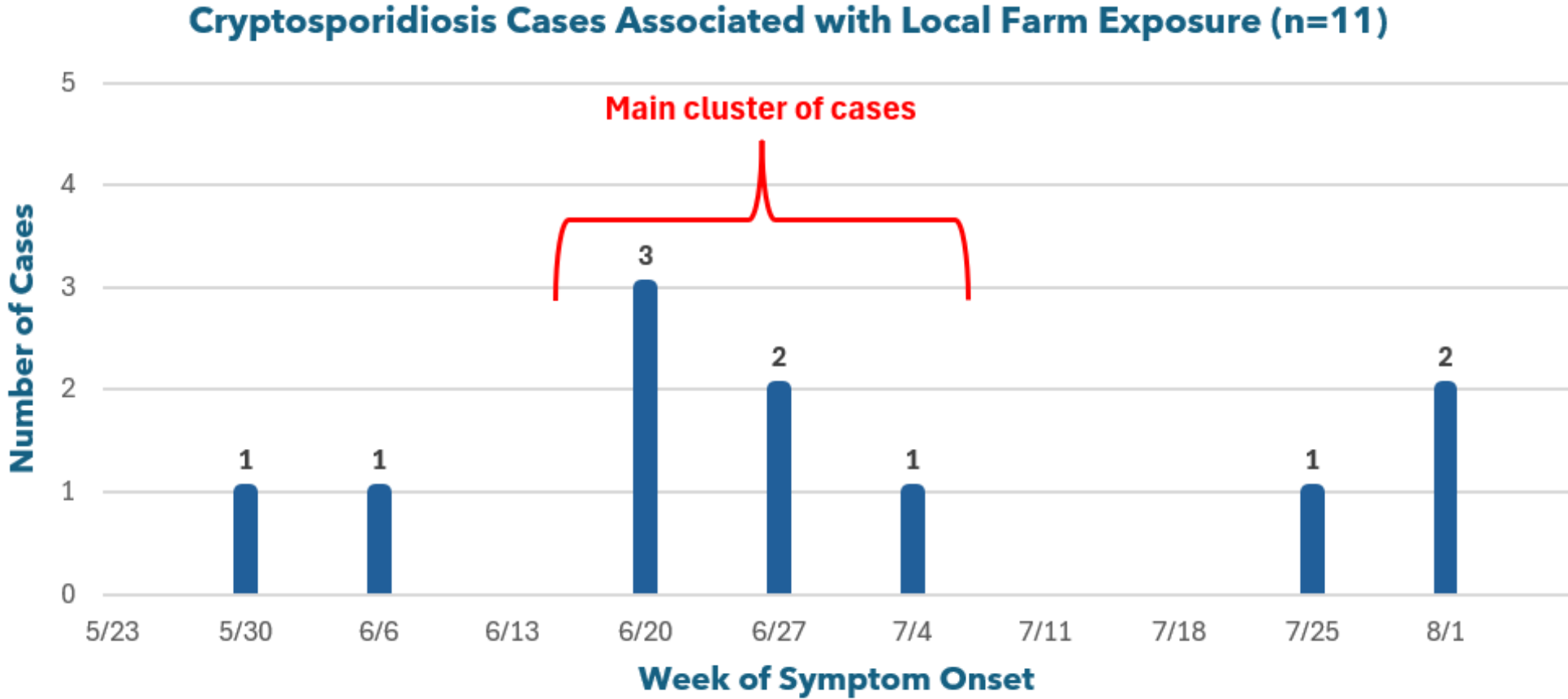


**6**  
Massachusetts Residents

## Key Findings

- ✓ 5 cases were out-of-state residents.
- ✓ This outbreak included multiple **employees of the farm.**
- ✓ This investigation identified **multiple infection control gaps.**

# Epidemic Curve of Cryptosporidiosis Symptom Onset Dates



**Most cases occurred between June 20 and July 3, 2024, with additional sporadic cases before and after this period. This suggests intermittent or ongoing exposure.**

# Public Health Response

- ✓ Local Board of Health played a **major** role in investigation and conducted farm visits.
- ✓ DPH notified MA Department of Agricultural Resources and State Veterinarian
- ✓ Investigative activities were documented
- ✓ Ongoing monitoring and follow-up conducted

# LBOH Observations

## Animal Health

- Animals with GI symptoms were not immediately removed from public areas

## Hand Hygiene

- Hand sanitizer was more accessible than handwashing stations
- Only 3 handwashing stations identified on-site
- **NO** handwashing stations located within animal showcase area

## Animal Contact

- Direct animal contact area allows free roaming animals
- Strollers observed in animal exhibit areas

## Food & Cross-contamination Risks

- Food/drink observed in animal contact areas

## Employee Polices & Training

- No formal policy regarding employees work clothes/shoes
- Employees moved between animal pen areas without routine hand washing
- Limited enteric disease prevention training identified for employees

# LBOH Recommendations

**These recommendations were based on the LBOH's environmental assessment and observations during the site visit.**

- ✓ Increase handwashing station availability in animal areas
- ✓ Remove symptomatic animals from public areas **IMMEDIATELY**
- ✓ Improve enforcement of no food/drink policy
- ✓ Provide employees education on enteric disease prevention
- ✓ Implement policy regarding work clothing/shoes for staff
- ✓ Increase educational signage regarding hand hygiene

# Additional Considerations

**Illness may be inevitable in some animal contact or waterborne environments!**

- A key consideration is determining when illness patterns represent an outbreak vs. what may be expected background illness.
- Individuals may become ill from multiple germs from the same exposure source.
- Investigations should consider severity, number of cases, common exposures, and whether illness patterns exceed expected levels.

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# **Resources & Prevention Messaging**

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# Animal Contact Resources

## NASPHV: Animal Contact Compendium and Resources

- [Animals in Public Settings Compendium 2023](#)
- [Toolkit](#)

## CDC: [Healthy Pets, Healthy People](#)

- [Farm animals](#)
- [Backyard poultry](#)
- [Pets and other animals](#) (dogs, cats, reptiles, rodents, etc.)
- [Staying healthy at animal exhibits](#)

## DPH: [Fact sheets](#)

- [Salmonellosis from Pet Reptiles and Amphibians](#)

# Animal Contact Prevention Messaging

## Animal Exhibits

- Wash hands with soap and water
  - After petting or holding animals
  - After being in animal enclosures – *you don't need to touch an animal to become sick!*
  - Before eating, drinking, or preparing food
- Keep children safe
  - Leave strollers, cups, and toys outside of the exhibit
  - Don't let children sit or play on ground in animal areas
  - Don't let children put their fingers or objects in their mouths when in animal areas

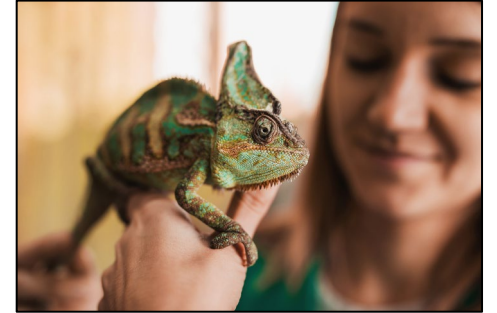


[Tips for Staying Healthy at Animal Exhibits | CDC](#)

# Animal Contact Prevention Messaging

## Pets in general

- Wash hands with soap and water
  - After feeding pet or handling its food
  - After handling pet's poop
  - After cleaning your pet's tank or aquarium and equipment (rocks, water, decorations)
  - Before eating, drinking, or preparing food
- Avoid opportunities for cross-contamination
  - Separate pet food from human food
- Limit handling of animals by young children



[Ways to Stay Healthy Around Animals | CDC](#)

# Waterborne Illness Resources (Recreational Water)

DPH: Waterborne illness webpage: [mass.gov/waterborne-illness](https://mass.gov/waterborne-illness)

- Resources for the public and healthcare/public health professionals

CDC: [Healthy Swimming](#)

- [Preventing swimming-related illnesses](#)
- [Preventing diarrheal illnesses](#)

# Recreational Water Prevention Messaging

## Important reminders

- Swallowing even a little bit of water can make you sick
- Chlorine doesn't kill germs instantly
  - *Cryptosporidium* can stay alive for 7+ days in properly chlorinated water
- Germs can spread to multiple pools depending on filtration

[Preventing Diarrheal Illnesses | CDC](#)

# Recreational Water Prevention Messaging

## Prevention steps for all water bodies

### **DO NOT:**

- × Poop (or pee) in water
- × Swallow water

### **DO:**

- ✓ Stay out of water if you have diarrhea
- ✓ Rinse off before going in water
- ✓ Take children on regular bathroom breaks
- ✓ Check diapers often (every hour)
- ✓ Wash hands before eating, drinking, or preparing food after being in water

[Preventing Diarrheal Illnesses | CDC](#)

# DPH Social Media Messages - Share Them!



Mass. Public Health @MassDPH · 5h

Going to a petting zoo? Leave your child's toys, cups, and pacifiers away from animals and animal areas. [ow.ly/b7lx50Z0grA](https://ow.ly/b7lx50Z0grA)



1 504



Mass.gov September 2, 2025 ·

Spending any time in water that contains elevated bacteria levels can make you sick. Don't go in the water if the beach is closed. Check here for swimming area closures before you head out: [ow.ly/WbqI50WC9Os](https://ow.ly/WbqI50WC9Os) See less

BEACH WATER  
QUALITY MONITORING

WHAT YOU NEED TO KNOW



8 3

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# Q & A

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