

NATIONAL OUTBREAK REPORTING SYSTEM (NORS) GUIDANCE

Table of Contents

Commonly Used Guidance	4
Introduction	5
What is Reportable to NORS.....	6
Definition of an Outbreak.....	6
Clusters	6
International Exposures.....	7
Create New Report	8
Outbreak	12
Primary Mode of Transmission (REQUIRED FIELD).....	12
Dates.....	12
Geographic Location	12
States	12
Counties — Available for single state exposure outbreaks.....	13
Place of exposure	13
Primary Cases	14
Primary Case Counts.....	14
Sex (number or percent of the primary cases).....	15
If outbreak occurred during >1 calendar year, # cases per year	15
Age (number or percent of the primary cases)	15
Signs or Symptoms	15
Incubation Period	16
Duration of Illness (among recovered primary cases).....	16
Healthcare-Seeking Behaviors.....	16
Case Outcomes.....	17
Case Characteristics	18
Travel	19
Secondary Cases	20
Mode of Secondary Transmission	20
Secondary Case Counts.....	21
Secondary Case Outcomes	21
Laboratory and Environmental Investigation	22
Sample Collection and Testing.....	22
Indicate whether any samples were tested for antimicrobial resistance by CDC NARMS.....	23
Environmental Investigation.....	23
Etiology and Isolates	24
Etiology	24
Isolates or Strains	26
Settings	27
Setting(s) of Exposure.....	27
Setting(s) of Exposure and Implicated Vehicle Description: Water	28
Associated Events.....	30
Long-Term Care Outbreaks.....	30
School Outbreaks.....	31
Correctional/Detention Facility Outbreaks	31
Attack Rates.....	32
Animal Contact Section	33

Animal Vehicle	33
Fungal Disease Outbreaks	37
Treatments	37
Environmental Sampling.....	37
Fungal Contributing Factors	37
Occupational Exposures	38
Personal Protective Equipment (PPE).....	38
Food Section	39
Food Vehicle	39
Food Contributing Factors	43
Traceback & Recall	43
Traceback Investigation.....	43
Recall.....	44
Water Section	45
Supporting evidence.....	45
Epidemiologic data table	45
Water Remarks	46
Legionella and Other Biofilm-Associated Pathogens	46
Recreational Water – Treated Venue	49
Recreational Water – Untreated Venue	50
Drinking Water Systems	51
Other exposures to Water, Including Other Environmental Exposures to Water	52
Undetermined Exposures to Water.....	53
Outbreak Detection & Investigation Methods.....	53
Outbreak Detection	53
Investigation Methods.....	54
Other Linked CDC Systems	55
Interventions	56
Remarks	58

This document was prepared by the CDC NORS Team.

For general questions on reporting or the guidance document, email NORSAdmin@cdc.gov.

For questions on foodborne or animal contact transmission outbreaks, email NORS-Foodborne@cdc.gov.

For questions on waterborne transmission outbreaks, email NORSWater@cdc.gov.

For questions on person-to-person, environmental, or indeterminate/unknown transmission outbreaks, email NORSP2P@cdc.gov.

To access more information about NORS, visit the NORS public website at <http://www.cdc.gov/NORS>.

Commonly Used Guidance

Links to our most-used guidance sections.

1. [Definition of an Outbreak](#)
2. [Selecting a Primary Mode of Transmission](#)
 - a. [Information on Fungal Disease Outbreaks](#)
3. [Reporting Etiology and Isolates](#)
 - a. Guidelines on How to [Confirm a Foodborne Outbreak Etiology](#)
4. [Definition of a Multistate Outbreak](#)

Introduction

This guidance document gives detailed descriptions about each field in NORS, including definitions and examples. It is not intended to be a technical or training guide on how to navigate reporting through the NORS web-based interface; for this, see the NORS training guides at <http://www.cdc.gov/NORS/training>.

This guidance document follows the flow of the PDF reporting form and the web-based user interface; therefore, it is recommended to view the guidance document in conjunction with the reporting form or the interface. However, it is important to note **that the guidance document is tailored to the web-based user interface**; slight differences may arise between this document and the PDF reporting form. The headers of each section in this document reflect the name of the reporting form and interface sections.

Unless otherwise specified, all sections refer only to [primary cases](#). Picklist values are provided in the interface for each picklist field. These values and some definitions are also listed and defined in Appendix E.

This guidance document accompanies the revised CDC 52.14 form and replaces the guidance for the previous NORS CDC 52.12 and 52.13 forms.

What is Reportable to NORS

Definition of an Outbreak

For NORS reporting, the definition of an outbreak is two or more cases of similar illness associated with a common exposure.

NORS is designed to capture all foodborne and waterborne outbreaks, certain fungal disease outbreaks, and enteric disease outbreaks spread by person-to-person contact, animal contact, environmental contamination, and indeterminate/unknown modes of transmission. Mode-specific definitions are provided beginning on page 8.

Note: Single cases, including single cases of botulism, ciguatera fish poisoning, and other toxin poisoning, do not meet the definition of an outbreak. Reports with a single primary case with multiple secondary cases also do not meet the definition of an outbreak and should be revised. Guidance on whether to include or exclude source case-patients is included on [page 8](#). Reports with a single primary case will not be cleaned or included in analyses or publications. To report foodborne or waterborne case reports involving algal blooms or toxins, please use the [One Health Harmful Algal Bloom System \(OHHABS\)](#).

If you are uncertain about how a specific outbreak should be reported, contact the NORS team at NORSAdmin@cdc.gov.

Clusters

Clusters occur when two or more cases of similar illnesses may be associated with a common exposure, but investigators do not have evidence to identify a shared exposure (e.g., food, animal, venue, or experience) among ill persons. Clusters **should not** be reported to NORS. For guidance on multistate clusters, see [Appendix B](#).

Example: Thirty people with infections from a pathogen were reported with isolates closely related by whole genome sequencing. Clinical isolates were not related to any food, animal, or environmental isolates, and epidemiological information collected did not suggest a common vehicle or venue among the case-patients. Without evidence that case-patients shared a common exposure, this would be considered a cluster and not an outbreak, so it is not reportable to NORS.

Household clusters

When investigating outbreaks where two or more ill persons are in the same household, the investigator should review the exposures and onset dates closely.

- If two or more ill persons in the same household had a common exposure and, if a particular pathogen is suspected, these persons had illness onset dates within the incubation period for the pathogen, this situation is probably an outbreak (i.e., these cases would be considered primary cases). If two or more ill persons from the same household have similar onset dates but do not have a recognized common exposure, this situation is possibly an outbreak.
- An illness in a household may be considered a [secondary case](#) (i.e., infected via contact with a primary case) if the ill person did not have the same exposure as any primary case, or the original source was no longer present in the household during the incubation period, or there was reasonable opportunity for the person to acquire infection from a primary case. If secondary cases cannot be distinguished from primary cases, then all cases can be reported as primary cases. Please

note in the General Remarks field at the end of the NORS report that distinctions could not be made.

International Exposures

NORS is designed to capture outbreaks with exposure occurring within the United States, the District of Columbia, five US territories (American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the US Virgin Islands), and three Freely Associated States (the Republic of the Marshall Islands, Palau, and the Federated States of Micronesia). Hereafter in this document, these may be collectively known as “states” or “reporting sites.”

Outbreaks resulting from exposures outside these reporting sites are not reportable through NORS. In general, this includes outbreaks originating from international exposure or in which the exposure occurred on a cruise ship with at least one international port of call. For more information on international cruises, see the Vessel Sanitation Program website at <http://www.cdc.gov/nceh/vsp/default.htm>. During an outbreak with exposures in both the United States and internationally, only cases exposed in the United States should be included in the NORS report case count. The number of cases exposed outside of the United States can be included in the General Remarks field.

Example: A contaminated frozen juice product is distributed to stores in the United States and Canada. Twenty people become ill after drinking the juice, 12 in the United States and 8 in Canada. Only the 12 cases who drank the juice in the United States would be included in the NORS report case count. The other 8 cases may be noted in the General Remarks section.

Create New Report

The below fields are required when creating a new NORS outbreak report. All fields may be updated if more information becomes available.

State Report ID (REQUIRED FIELD)

Enter the state-assigned identification number or name for the outbreak report. Each reporting site decides how to number or name their reports. A State ID cannot be used more than once within the reporting site.

Date first case became ill (REQUIRED FIELD)

Indicate the date the first primary case became ill. If the first ill date is unknown, enter an approximate first ill date.

Primary Cases (REQUIRED FIELD)

Enter the estimated total number of cases, including lab-confirmed and [probable](#), using the outbreak-specific case definition, who were exposed to the food, water, animal(s), person(s), or environment that was implicated in the initial outbreak, as determined by the state investigators.

As indicated in the table below, for foodborne outbreaks in which a source case-patient (e.g., food worker) contaminated the implicated food, the source case-patient is **not** considered to be a case. Similarly, if a person had a fecal or vomiting incident in a pool, resulting in a waterborne outbreak, this person is the source case-patient and is not considered to be a case. However, for person-to-person and indeterminate/unknown mode of transmission outbreaks, the source case-patient **is** considered a primary case in the outbreak.

Inclusion of Source Case-Patients as Primary Cases by Mode						
Mode	Animal contact	Environmental contamination	Foodborne	Indeterminate/unknown	Person-to-person	Waterborne
Source case-patient	Not applicable	Exclude	Exclude	Include	Include	Exclude

Primary mode of transmission (REQUIRED FIELD)

Select the box indicating the primary mode of transmission for the outbreak. If more than one mode of transmission was implicated, the primary mode is the mode that resulted in the first illnesses in the outbreak. For example, if an outbreak in a nursing home began with consumption of contaminated food in the dining hall and then spread through person-to-person contact among residents and staff, select food as the primary mode of transmission and person-to-person as the mode of secondary transmission. The mode of transmission does not need to be conclusively proven before being selected. Once a mode of transmission is chosen in the NORS interface and the information is saved, the corresponding sections for that mode of transmission will appear.

- **Food** — Select if transmission occurred through consuming contaminated food or non-water beverages, including raw milk. This mode includes dietary supplements, such as protein powders, but excludes over-the-counter and prescription medicines.

- The source case-patient **should not** be considered a primary case in the outbreak.
- When produce is contaminated in a field by contact with contaminated irrigation water or during processing or preparation with contaminated wash water, the mode of transmission is *food*.
- When food is contaminated by an animal (e.g., vermin or a pet) prior to consumption, the mode of transmission is *food*.
- When food that is processed or prepared for others is contaminated by an infected person, and the illness is attributed to the food, the mode of transmission is *food*.
- When the contaminated ingredient of a non-water beverage is water or ice made with contaminated water, the mode of transmission is *water*. If no contaminated ingredient is found, but the water or ice are not contaminated, the mode of transmission is *food*. See [Appendix A](#) for more details on how to choose a mode of transmission for certain foods and beverages containing ice.
- A [food vehicle](#) does not need to be identified to select food as the mode of transmission.
- **Example:** Ten people became ill following a church potluck. No one reported attending the event while ill. Consumption of potato salad was significantly associated with illness. This would be considered a *foodborne* outbreak.
- If it is unclear whether an outbreak is considered foodborne, please email NORS-Foodborne@cdc.gov.
- **Water** — Select if the illnesses were associated with exposure via ingestion, inhalation, contact, or another route to water (e.g., treated or untreated recreational water, drinking water [including bottled water], or an environmental or indeterminate water source).
 - The source case-patient **should not** be considered a primary case in the outbreak.
 - This mode includes exposures to recreational water–associated chemicals, including naturally-occurring toxins, that become volatilized or aerosolized into the air surrounding the water body.
 - See [Appendix A](#) for examples on how to choose a mode of transmission for certain beverages and foods or drinks containing ice.
 - **Example:** Several people become ill with giardiasis following a backpacking trip in a state park. No water samples from the state park were collected, but *Giardia* was detected in clinical specimens. Confirmed cases reported drinking from various streams while backpacking and used only iodine as the disinfection method instead of the recommended filtration and disinfection methods. This would be considered a waterborne outbreak.
- **Animal contact** — Select if the illnesses were linked to contact with an animal, its bodily fluids (excluding raw milk or other fluids consumed as food), fur, hair, feathers, scales, or skin, its food, or by contact with the environment where the animal resides (e.g., barns, petting zoos, and pet stores).
 - Source case-patient does not apply as the vehicle is deemed to be an animal rather than a person.
 - This mode includes contact with any animal (e.g., pets, farm animals, wildlife).
 - This mode includes illness that results from exposure to the environment in which an animal resides, including bedding, flooring, barriers, or other surfaces, even in the absence of direct contact with the animal.

- An [animal vehicle](#) does not need to be identified to select animal contact.

Example: Several people become infected with *Salmonella* Poona. When questioned, all of the case-patients had contact with small turtles in the week before they became ill. The investigation revealed that all of the turtles came from the same farm and environmental samples from the farm revealed the outbreak strain. This would be considered an *animal contact* outbreak.
- **Person-to-person** — Select if the initial illnesses were associated with direct contact with an infected person, their bodily fluids, or by contact with the local environment where the exposed person was simultaneously present with the infected person and may have had the opportunity for direct contact.
 - The source case-patient **should** be considered a primary case in the outbreak.
 - Although environmental contamination is often a factor in person-to-person outbreaks, if most of the case-patients had known direct contact with one another or likely had the opportunity for direct contact with one another, consider the primary mode of transmission to be person-to-person. In those situations, environmental contamination may be selected as the mode of secondary transmission, if there is evidence suggesting it contributed.
 - **Example:** An outbreak takes place among attendees at a class reunion in a restaurant. Food histories were collected, but no contaminated food was identified. No other illnesses were reported among other restaurant patrons. Upon further investigation, one of the cases attended the reunion while ill. Because there was direct contact among attendees, this was considered a person-to-person outbreak.
 - **Example:** An outbreak occurs in a long-term care facility. Several staff and residents become ill within a few days, with several more illnesses occurring over the next two weeks. No ill food workers or visitors were reported. Since there were multiple opportunities for direct contact among ill persons and evidence of ongoing, propagated transmission (i.e., non-point source), the mode of transmission was considered person-to-person.
- **Environmental contamination other than food/water (hereafter referred to as “Environmental contamination”)** — Select if the initial illnesses were associated with exposure to a contaminated environment (e.g., contaminated air, mud, soil, or other outdoor or indoor surfaces or objects) not attributable to foodborne, waterborne, person-to-person, or animal contact transmission, as defined above. Additionally, select for fungal disease outbreaks including blastomycosis, coccidioidomycosis, histoplasmosis, and sporotrichosis outbreaks.
 - The source case-patient **should not** be considered a primary case in the outbreak. Source case-patient does not apply in fungal disease outbreaks.
 - Do not select environmental contamination if there was direct contact between cases (see person-to-person transmission, above).
 - **Example:** Ten people become sick after using the same restroom. No other common exposures were identified. This would *not* be considered a person-to-person outbreak because those who became sick did not come into direct contact with the source case-patient. Instead, this would be an outbreak due to *environmental contamination*.
 - **Example:** Fifteen boy scouts developed histoplasmosis after a camping trip. Common activities included hiking and participation in a scavenger hunt, during which many campers were

exposed to a hollowed-out tree filled with bat guano, the likely source of the fungus. This would be an outbreak due to *environmental contamination*.

- **Indeterminate/unknown** — Select if the outbreak mode of transmission was not identified or is unknown. An outbreak caused by an enteric pathogen for which there is insufficient epidemiologic or environmental microbiology data (e.g., environmental sample test results) to link the outbreak to a specific mode of transmission would be reported as indeterminate/unknown mode.
 - The source case-patient **should** be considered a primary case in the outbreak.
 - For outbreaks in which the mode of transmission cannot be determined, select indeterminate/unknown as the mode of transmission. If there are known or suspected secondary modes of transmission, select the modes of transmission in the Secondary Mode of Transmission field, and treat all outbreak-associated ill persons as primary cases. Report all information available and provide any additional information (e.g., foods involved) in the General Remarks field at the end of the NORS report.
 - **Example:** An outbreak occurs at a wedding. No food items or beverages were associated with illness, and no food workers or guests reported illness before the event. Because it could not be determined what the outbreak source was, select indeterminate/unknown as the primary mode of transmission. Select any of the other modes as the secondary mode of transmission if there is some evidence that transmission might have occurred through these modes over the course of the outbreak. Treat all patients as primary cases, with zero estimated total secondary ill cases.

Exposure state(s) (REQUIRED FIELD)

Select the name(s) of the state(s) where the exposure occurred. Select all that apply.

Outbreak

Primary Mode of Transmission (REQUIRED FIELD)

This is the primary mode of transmission that was chosen for this outbreak report.

Dates

Date first case became ill (REQUIRED FIELD) — If the date is unknown, enter an approximate first ill date.

Date last case became ill — Indicate the date the last case became ill. If the date is unknown, leave this field blank or enter an approximate last ill date.

Date of initial exposure — Indicate the date when the initial known exposure to the outbreak source took place among primary cases. If the initial exposure date is unknown, leave this date field blank or enter an approximate initial exposure date.

Date of last exposure — Indicate the date when the last known exposure to the outbreak source took place among primary cases. If the last exposure date is unknown, leave this date field blank or enter an approximate date of last exposure.

Date of notification to State/Territory or Local/Tribal Health Authorities — Enter the date that state/territory or local/tribal health authorities were first notified or first learned about the outbreak or enter an approximate date of notification.

Date outbreak investigation began — Enter the date that the state/territorial or local/tribal health authorities began investigating the outbreak.

Geographic Location

States

Exposure occurred in single state — Indicate if the outbreak resulted from an exposure that occurred in a single state, and all primary cases resided in the same state.

- **Specify exposure state (REQUIRED FIELD)** — Select the name of the state where the exposure occurred.

Exposure occurred in multiple states — Indicate if the outbreak resulted from a common exposure that occurred in multiple states. For guidance on reporting these outbreaks, see [Appendix B](#).

- **Specify exposure states (REQUIRED FIELD)** — Select all states in which an exposure occurred, including your own state.
- **Case Count** — Specify the number of cases exposed in each selected state.

Exposure occurred in a single state, but some or all cases resided in different state(s) — Indicate if the outbreak resulted from an exposure in one state, but cases resided in another state or in multiple states. For additional guidance, see [Appendix B](#).

- **Specify exposure state (REQUIRED FIELD)** — Select the name of the state where the exposure occurred.

- **Specify other states where cases resided** — Select other states where cases resided, not including the exposure state.
- **Case Count** — Specify the number of cases who resided in each selected state, including the exposure state.

Counties — Available for single state exposure outbreaks.

Exposure occurred in single county — Indicate if the outbreak resulted from an exposure that occurred in a single county and all primary cases resided in the same county.

- **Specify exposure county** — Select the name of the county where the outbreak occurred.

Exposure occurred in multiple counties — Indicate if the outbreak resulted from an exposure that occurred in multiple counties.

- **Specify exposure counties** — Select all counties in which exposure occurred, including your own county.

Exposure occurred in a single county, but some or all cases resided in different counties — Indicate if the exposure occurred in a single county but ill persons were residents of another county or of multiple counties.

- **Specify exposure county** — Select the name of the county where exposure occurred.
- **Specify other counties where cases resided** — Select other counties where cases resided, not including the exposure county since that was already captured in the “Specify exposure county” field.

Place of exposure

Did exposure occur on any of the following?

Select Not applicable (N/A) or select all land types that apply.

- **Tribal land (within census bureau boundaries)** — Indicate if the exposure occurred on land designated by the US Census Bureau as an American Indian and Alaska Native area, which include American Indian reservations, trust lands, tribal jurisdiction statistical areas, and tribal designated statistical areas.
- **National park** — Indicate if the exposure occurred in a national park or other area managed by the National Park Service (NPS), e.g., in a national battlefield, national monument, or national seashore. If selected, please include the name of the national park in the City/Town/Place of exposure field. Please see <https://www.nps.gov/aboutus/national-park-system.htm> for a list of sites managed by NPS.
- **Other federal land (e.g., national forest, military base)** — Indicate if exposure occurred on federal land *not* managed by NPS or designated as tribal land. This includes public lands, such as those managed by the US Forest Service, the US Fish & Wildlife Service, and the Bureau of Land Management, as well as federal facilities, such as military bases, Veterans Affairs (VA) hospitals, and prisons. If selected, please include the name and type of federal land in the City/Town/Place of exposure field.
- **City/Town/Place of exposure (e.g., facility name)** — Enter city, town, or place of exposure. For example, if the reporting state was Georgia and the reporting county was Fulton, City/Town/Place of

exposure might be one or more cities/towns incorporated into Fulton County, such as Alpharetta or Johns Creek.

Primary Cases

Primary Case Counts

Enter the number of lab-confirmed and probable primary cases; see [page 8](#) for guidelines on inclusion of source case-patients.

Note: Usually, primary cases and secondary cases differ by mode of transmission (e.g., in a foodborne outbreak that is followed by person-to-person transmission to household contacts, the household contacts are secondary cases). However, outbreaks may also occur where primary and secondary cases share the same mode of transmission (e.g., both result from person-to-person transmission) but have different exposure contexts. For example, a person-to-person outbreak in a nursing home may result in primary cases among residents and staff, then secondary cases among household contacts. Any household contacts who became ill from person-to-person transmission would be considered secondary cases, even though the primary and secondary modes of transmission were both person-to-person. Notably, all cases in fungal disease outbreaks result from exposure to the contaminated environment and therefore are all primary cases.

Secondary cases should be recorded in the [Secondary Cases](#) section. For outbreaks where multiple modes of transmission or exposures are suspected but cannot be separated from one another, classify all cases as primary cases. In such instances, report suspected transmission modes and other details in the Secondary Cases section even if the number of secondary cases is reported as zero and report additional information in the Remarks field.

Lab-confirmed primary cases — Primary cases in which a specimen was collected and a laboratory was able to confirm the pathogen(s) or agent(s) causing illness. For a foodborne outbreak, marine toxin cases that meet exposure and symptom confirmation guidelines should be included in this count. See [page 8](#) for guidelines on inclusion of source case-patients.

Probable primary cases — Primary cases that are epidemiologically linked to a confirmed case or exposure (e.g., setting) but do not have laboratory confirmation (e.g., a specimen was not collected or submitted to a laboratory). See [page 8](#) for guidelines on inclusion of source case-patients.

Estimated total primary cases (REQUIRED FIELD) — Enter the estimated number of total primary cases, including lab-confirmed and probable, using the outbreak-specific definition as determined by the state investigators. If additional case designations (e.g., suspected cases) are defined for the state investigation, they should be included in the estimated total primary cases. The estimated total primary cases should be greater than or equal to the sum of the lab-confirmed and probable primary cases.

Note: The fields for lab-confirmed primary cases, probable primary cases, and estimated total primary cases are not intended to conflict with a state's outbreak-specific case definition, but rather are intended to determine which outbreaks have laboratory confirmation and which not. The remainder of the Primary Cases section is based on the number of estimated total primary cases. All case-patients with domestic exposure should be included in the case count, both US residents and non-residents.

Example 1: In an outbreak of cryptosporidiosis, the state's case definition for this outbreak is as follows: A confirmed case was defined as a person who swam in the community pool with an illness onset date

on or after September 1, 2008. The state reported 10 cases that met this case definition. Of these 10 cases, 2 cases were lab-confirmed cryptosporidiosis. Therefore, for NORS reporting purposes:

Type of Primary Case	Count
Lab-confirmed primary cases	2
Probable primary cases	8
Estimated total primary cases	10

Example 2: In an outbreak of scombroid toxin poisoning, 5 restaurant patrons reported a tingling and burning sensation on their tongues and throats after eating tuna. Laboratory testing was not done.

Therefore, for NORS reporting purposes:

Type of Primary Case	Count
Lab-confirmed primary cases	0
Probable primary cases	5
Estimated total primary cases	5

Sex (number or percent of the primary cases)

Enter the number or percent of males and females among the total number of primary cases for whom information is available. Report the number or percent of cases for whom sex information is unknown in the Unknown field. The numbers should add up to the number of estimated primary cases, and percentages should add up to 100. If you have percentages that add up to a number other than 100 (e.g., 99), then case counts should be entered instead.

If outbreak occurred during >1 calendar year, # cases per year

For foodborne and animal contact outbreaks that have spanned more than a single calendar year, select the years when primary cases first became ill. For each year selected, enter the estimated total cases with an illness onset date in that year, the number of lab-confirmed cases, and the number of probable cases. The estimated total cases should not be less than the sum of the lab-confirmed and probable cases. This field should reflect the total number of suspected, probable, and confirmed cases; do not extrapolate from the number of people exposed. If suspected cases are defined for a particular outbreak investigation, they should be included in the estimated total cases.

Age (number or percent of the primary cases)

Enter the number or percent of primary cases that fall into each age group among the total number of primary cases for whom information is available. Report the number or percent of primary cases where age information is unknown in the Unknown field. The numbers should add up to the number of estimated primary cases and percentages should add up to 100. If you have percentages that add up to a number other than 100 (e.g., 99), then case counts should be entered instead.

Signs or Symptoms

Several commonly investigated signs and symptoms are displayed in this section. Other signs/symptoms should be selected from the “Add Signs or Symptoms” list.

- **Sign or Symptom** — This is the name of the sign/symptom that is being reported.
- **# cases** — For each sign/symptom reported, enter the number of primary cases with that sign/symptom during the outbreak. If the number of cases is entered for a sign/symptom, the number of cases with information available must also be entered.
- **# cases with info available** — For each sign/symptom reported, enter the number of primary cases for whom information is available on whether they experienced that particular sign/symptom during the outbreak. This number may be as few as the number of primary cases with that sign/symptom or as great as the estimated total number of primary cases.

Incubation Period

The incubation period is the time between the exposure and the clinical onset of illness for primary cases; it includes the date or time of exposure until the date or time that the signs or symptoms began. For example, if cases ingested contaminated beef on Monday, May 1, and a case-patient's symptoms started on Friday, May 5, the incubation period for that case-patient would be 4 days (May 1–4).

Indicate the shortest, median, and longest incubation periods among primary cases, and the total number of primary cases for whom information is available. Select the appropriate units (minutes, hours, or days). If sufficient data are not available to calculate a particular range, leave that range blank.

If information is only available for one case, then enter the same information in each of these fields: the shortest, median, and longest incubation periods.

If the incubation period is unknown, check the box labeled "Unknown incubation period."

Duration of Illness (among recovered primary cases)

The duration of illness is the time between the onset of the earliest symptom and the time the last symptom ended for primary cases; it includes the date that symptoms began through the date or time that the symptoms ended, inclusive. For example, a case had episodes of diarrhea that started on Monday, March 4, and vomiting that started on Tuesday, March 5. The diarrhea ended on Wednesday, March 6, but vomiting continued until Thursday, March 7, so the duration of illness would be 4 days (March 4–7).

Indicate the shortest, longest, and median duration of illness, and the total number of primary cases for whom information is available among those who have recovered. Select the appropriate units (minutes, hours, or days). If sufficient data are not available to calculate a particular range, leave that range blank.

If information is only available for one case, then enter the same information for the shortest, median, and longest durations of illness.

If duration of illness is unknown, check the box labeled "Unknown duration of illness."

Healthcare-Seeking Behaviors

Count all applicable healthcare-seeking behaviors for each primary case. The categories are not mutually exclusive (i.e., a case is able to visit both a health care provider and an emergency department, and each should be noted on the report). If no primary cases sought care, enter "0" for the number of cases and indicate the total number of cases for whom information is available in the appropriate box. Do not leave the fields for the number of cases with information available blank – if no information is available, enter "0" for the number of cases with information available and leave number of cases blank.

Number of Cases

- **Visited health care provider** — Indicate the number of case-patients who visited any kind of **outpatient** health care provider, excluding emergency department visits but including primary care physicians, physician’s assistants, nurses, or other medical professionals, or urgent care facilities, as a result of becoming ill during the outbreak.
- **Visited emergency department** — Indicate the number of case-patients who visited the emergency department as a result of becoming ill during the outbreak.
- **Visited Indian Health Service or tribal facility** — Indicate the number of case-patients who visited an Indian Health Service or tribal facility as a result of becoming ill during the outbreak.

Number of Cases with Information Available

- **Visited health care provider** — Indicate the total number of cases for whom information on outpatient health care provider visits is available, excluding emergency department visits.
- **Visited emergency department** — Indicate the total number of cases for whom information on emergency department visits is available.
- **Visited Indian Health Service or tribal facility** — Indicate the total number of cases for whom information on Indian Health Service or tribal facility visits is available.

Case Outcomes

For the following outcomes, indicate the number of case-patients with the outcome, and the number of cases for whom information on the outcome is available. If no primary cases had the outcome, enter “0” for the number of cases and indicate the total number of cases for whom information is available in the appropriate box. Do not leave the number of cases with information available fields blank; if no information is available, enter “0” for the number of cases with information available and leave number of cases blank.

Number of Primary Cases (these categories are not mutually exclusive)

- **Died** — Indicate the number of case-patients who died as a result of becoming ill during the outbreak. If a case-patient was hospitalized with an unrelated illness, became ill with the outbreak-related pathogen, and then died due to the outbreak pathogen, he or she should be included in this count.

Note: Neonatal deaths should only be included in this count if the illness was acquired through the primary mode of transmission. For example, if a neonate became ill and died after drinking contaminated formula as part of a foodborne outbreak, the neonate would be considered a primary case. Neonatal deaths resulting from maternal (vertical) transmission should be counted under the secondary case outcomes death category, except for person-to-person outbreaks (as the neonate would be a primary case in that scenario). Fetal losses should not be included in this count, but they should be noted in the pregnancy loss field.

- **Hospitalized** — Indicate the number of case-patients who were hospitalized as a result of becoming ill during the outbreak.
- **Hemolytic uremic syndrome (HUS)** — Indicate the number of case-patients who were diagnosed with HUS during the course of the outbreak-associated illness.
- **Disseminated infection** — Indicate the number of case-patients who were diagnosed with a disseminated infection, such as a bloodstream infection (e.g., bacteremia or fungemia), meningitis, or joint infection.

- **Pregnancy loss** — Indicate the number of case-patients who lost a pregnancy (e.g., miscarriage or stillbirth) as a result of the outbreak-associated illness.

Number of Primary Cases with Information Available

- **Died** — Indicate the total number of cases for whom information on mortality is available.
- **Hospitalized** — Indicate the total number of cases for whom information on hospitalization status is available.
- **Hemolytic uremic syndrome (HUS)** — Indicate the total number of cases for whom HUS information is available.
- **Disseminated infection** — Indicate the total number of cases for whom information on disseminated infection is available.
- **Pregnancy loss** — Indicate the total number of pregnant cases.

The Healthcare-Seeking Behaviors and Primary Case Outcomes categories are not mutually exclusive. For example, if a case-patient visited a health care provider as a result of becoming ill during the outbreak and on a different occasion, the person visited the ED as a result of the illness, and then was hospitalized as a result of the illness, this person would be counted in the # cases and # cases with info for all three fields (Visited health care provider, Visited ED, and Hospitalized).

Case Characteristics

For the following characteristics, indicate the number of case-patients who fit the description, and the number of cases for whom information is available. If no primary cases had the characteristic, enter “0” for the number of cases and indicate the total number of cases for whom information is available in the appropriate box. Do not leave the number of cases with information available fields blank; if no information is available, enter “0” for the number of cases with information available and leave number of cases blank.

Number of Primary Cases (these categories are not mutually exclusive)

- **Attended or worked in child day care** — Indicate the number of cases who attended or worked in a child day care facility during the exposure period of interest (or in the 7 days before illness began for unknown etiologies). Please complete this field for all outbreaks, not just child day care setting outbreaks.
- **Were experiencing homelessness** — Indicate the number of cases who were experiencing homelessness during the exposure period of interest (or in the 7 days before illness began for unknown etiologies). A person experiencing homelessness is an individual who lacks a fixed, regular, and adequate nighttime residence, which includes:
 - A person whose primary nighttime residence is a public or private place not meant for human habitation such as the street, a transportation hub, or a car.
 - A person living in a shelter designated to provide temporary living arrangements (including congregate shelters, transitional housing, and hotels and motels).
- **Were exposed in the workplace** — Indicate the number of cases who were exposed in the workplace during the exposure period of interest (or in the 7 days before illness began for unknown etiologies). Please complete this field for all outbreaks regardless of setting.

- **Were immunocompromised** — Indicate the number of cases who were immunocompromised (e.g., those with advanced or untreated HIV/AIDS, cancer, or transplant patients) during the exposure period of interest (or in the 7 days before illness began for unknown etiologies).
- **Were men who reported sexual contact with another man (MSM)** — Indicate the number of male cases (18 years or older) who reported sexual contact with another man during the exposure period of interest (or in the 7 days before illness began for unknown etiologies). Sexual contact can include genital, anal, and oral sex, anilingus or rimming, and other sexual contact (e.g., hand-to-anus contact). This information is important for characterizing cases, identifying risk factors and emerging vulnerable populations, and addressing the increasing prevalence of antibiotic resistance among MSM.

Note: Only complete this field for person-to-person and indeterminate/unknown outbreaks.

Number of Primary Cases with Information Available

- **Attended or worked in child day care** — Indicate the total number of primary cases for whom information on child day care attendance or work is available.
- **Were experiencing homelessness** — Indicate the total number of primary cases for whom information on homelessness is available.
- **Were exposed in the workplace** — Indicate the total number of primary cases for whom information on workplace exposure is available.
- **Were immunocompromised** — Indicate the total number of primary cases for whom information on immunocompromised status is available.
- **Were men who reported sexual contact with another man (MSM)** — Indicate the total number of known adult men (18 years or older) in the outbreak who were primary cases.

Travel

During the exposure period of interest, did any primary case-person travel for at least one night away from the primary residence?

Only complete this field for environmental contamination, person-to-person, water, and indeterminate/unknown outbreaks.

- **Domestically** — Indicate whether any primary cases traveled for a least one night away from their primary residence domestically. Domestic travel includes any location within the United States, D.C., US territories, and Freely Associated States.
- **Internationally** — Indicate whether any primary cases traveled for a least one night away from their primary residence internationally. International travel includes any location outside of the United States, D.C., US territories, and Freely Associated States.

Was the outbreak associated with the source case-patient (e.g., food worker) traveling

internationally? — Complete this field for foodborne outbreaks only. Indicate whether the outbreak was associated with the source case-patient (e.g., food worker who contaminated the implicated food) traveling internationally.

Secondary Cases

A secondary case is one in which the person was not directly exposed to the food, water, animal(s), person(s), or environment that was implicated in the initial outbreak but who had a different exposure that led to illness (most commonly, person-to-person contact with a primary case). Examples of primary and secondary case designation are provided under “Primary Cases” on page 15.

Any cases that can be clearly defined as secondary cases using the definitions described above should be detailed in the Secondary Cases section. For outbreaks where multiple modes of transmission or exposures are suspected but cannot be separated from one another, classify all cases as primary cases. In such instances, report suspected transmission modes and other details in the Secondary Cases section even if no numbers for secondary cases are being reported and report additional information under Agency & Remarks.

Mode of Secondary Transmission

This field refers only to secondary mode of transmission. If more than one mode of transmission was involved during the outbreak, the secondary mode of transmission would lead to illnesses that were not part of the initial outbreak illnesses. Select all that apply.

- **Food** — Select if secondary transmission of illness occurred through consuming contaminated food or non-water beverages, including raw milk. This includes dietary supplements, such as protein powders, but excludes over-the-counter and prescription medicines.
 - See [Appendix A](#) for examples on how to choose a mode of transmission for certain beverages and foods or drinks containing ice.
- **Water** — Select if secondary transmission of illness was associated with exposure via ingestion, inhalation, contact, or another route to treated or untreated recreational water, drinking water (including bottled water), or an unknown or other water source.
 - See [Appendix A](#) for examples on how to choose a mode of transmission for certain beverages and foods or drinks containing ice.
- **Animal contact** — Select if secondary transmission of illness was associated with contact with an animal, its bodily fluids (excluding raw milk or other fluids consumed as food), fur, hair, feathers, scales, or skin, its food, or by contact with the environment where the animal resides (e.g., barns, petting zoos, and pet stores).
- **Person-to-person** — Select if secondary transmission of illness was associated with direct contact with a primary case that became infected through the primary mode of transmission, their bodily fluids, or by contact with the local environment where the secondary case was simultaneously present with a primary case.

Note: A primary person-to-person outbreak consists of multiple generations of exposures and cases, all of which may be involved in the same exposure context (e.g., illness spread among students and staff at a school). In this case, all of the students and staff that became ill would be considered primary cases and only those who became ill through a different exposure context (e.g., household contacts of ill students or staff) would be considered secondary cases.

- **Example:** An outbreak of norovirus occurred after a catered meal with subsequent transmission occurring in family members of attendees. This may be considered a *foodborne* outbreak with secondary *person-to-person* transmission.

- **Example:** An outbreak occurs in a long-term care facility. Several staff and residents become ill within a few days, with several more illness occurring over the next two weeks. No ill food workers or visitors were reported. Family members of ill staff, who did not visit the long-term care facility, also report illness. This may be considered a *person-to-person* outbreak with secondary *person-to-person* transmission.
- **Environmental contamination other than food/water** — Select if secondary transmission of illness was associated with exposure to a contaminated environment (e.g., contaminated air, mud, soil, or other outdoor or indoor surfaces or objects) not attributable to foodborne, waterborne, person-to-person, or animal contact transmission, as defined above.
 - **Example:** An outbreak of norovirus infection occurred after consumption of a contaminated catered meal at a conference center. A primary case, who had consumed the contaminated food the day prior, vomited in a public restroom in the conference center. The restroom was cleaned by the conference center staff, but other users of that restroom who did not have direct contact with the primary case and did not attend the catered meal subsequently became ill. This may be considered a *foodborne* outbreak with secondary *environmental contamination* transmission.
- **Indeterminate/unknown** — Select if the mode of secondary transmission of illness was not identified or is unknown.

Secondary Case Counts

Only include information on secondary cases; information on primary cases should be completed in the Primary Cases section.

- **Lab-confirmed secondary cases** — Enter the number of secondary cases associated with the outbreak in which a specimen was collected and a laboratory was able to confirm the pathogen(s) or agent(s) responsible for the illness.
- **Probable secondary cases** — Enter the number of secondary cases epidemiologically linked to the outbreak but who do not have laboratory confirmation (e.g., a specimen was not collected or submitted to a laboratory).
- **Estimated total secondary cases** — Enter the estimated total secondary cases, including lab-confirmed and probable, using the outbreak-specific definition.
- **Estimated total cases (Primary + Secondary)** — This field will auto-populate to include all primary and secondary cases.

Secondary Case Outcomes

Complete this section for food and animal contact outbreaks only. For the following outcomes, indicate the number of secondary cases with the outcome, and the number of secondary cases for whom information on the outcome is available. If no secondary cases had the outcome, enter “0” for the number of cases and indicate the total number of cases for whom information is available in the appropriate box. **Do not leave the number of cases with information available fields blank;** if no information is available, enter “0” for the number of cases with information available and leave number of cases blank.

Number of secondary cases (these categories are not mutually exclusive)

- **Died** — Indicate the number of secondary cases who died as a result of becoming ill during the outbreak. If a patient was hospitalized with an unrelated illness, became ill with the outbreak-

related pathogen, and then died due to the outbreak pathogen, he or she should be included in this count. Neonatal deaths should be included in this count if resulting from maternal (vertical) transmission, except for person-to-person outbreaks (as the neonate would be a primary case in that scenario). Fetal losses that occur among secondary cases should not be included in this count.

- **Hospitalized** — Indicate the number of secondary cases who were hospitalized as a result of becoming ill during the outbreak.
- **Hemolytic uremic syndrome (HUS)** — Indicate the number of secondary cases who were diagnosed with HUS during the course of the outbreak-associated illness.

Number of secondary cases with information available

- **Died** — Indicate the total number of secondary cases for whom information on outcome is available.
- **Hospitalized** — Indicate the total number of secondary cases for whom information on hospitalization status is available.
- **Hemolytic uremic syndrome (HUS)** — Indicate the number of patients for whom HUS information is known.

Laboratory and Environmental Investigation

In this section, human samples pertain to **primary cases and source case-patients** only. Do not enter any information concerning specimen collection or laboratory testing of secondary case specimens. Both suspected and confirmed outbreak etiologies are accepted in this section. Complete this section for all modes of transmission.

Sample Collection and Testing

Were any samples tested?

Indicate whether any samples collected from primary cases or from implicated animals, food, water, or environmental sources were tested. Food worker specimens are captured below in a subset of human samples, including potential source-case patients. If samples were tested, answer the following sub-questions.

What types of samples were tested?

Indicate the types of samples tested.

- **Human** — Indicate whether human specimens were tested. If yes, provide the number of people, including food workers, from whom specimens were tested.
 - **Food worker** — If human specimens were tested, indicate whether any food worker specimens were tested.
- **Animal** — Indicate whether any animal samples were tested.
- **Food** — Indicate whether any food samples were tested.
- **Water** — Indicate whether any water samples were tested.
- **Other environmental** — Indicate whether any other environmental specimens were tested, such as drain swabs, soil samples, etc. If yes, specify what types were tested.

What were they tested for?

If samples were tested, indicate whether the human samples and animal, food, water, and other environmental samples were tested for bacteria or bacterial toxins, viruses, parasites, chemicals or non-bacterial toxins, fungi, or other. *Select all that apply in each group.* If the tests conducted are not known, then select “Unknown”.

What test types were used?

Indicate the types of tests used for human samples and for animal, food, water, and other environmental samples. *Select all that apply in each group.* If the test types are not known, then select “Unknown”. If the test type is not among those listed, please select “Other” and specify the test type in space provided.

Did CDC NARMS perform antimicrobial susceptibility testing?

Indicate whether any samples were tested for antimicrobial resistance by CDC NARMS.

Environmental Investigation

Complete for waterborne outbreaks only. This section collects information about the environmental investigation. These data provide evidence regarding whether water quality—including the presence of specific pathogens, chemicals, or toxins in the water—was associated with the outbreak. Information from multiple water samples can be reported.

Which of the following sampling locations were tested?

Indicate the locations where environmental samples were taken (i.e. Pool, Lake/Reservoir, etc.).

Note: Multiple locations can be selected from the list in Appendix E.

Did environmental sampling results implicate water as the primary mode of transmission?

Indicate if environmental sampling results suggested this was a waterborne disease outbreak.

Did the results implicate the vehicle(s) of transmission?

Indicate whether environmental sampling results identified the vehicle (i.e., water source) of transmission for the outbreak.

Summarize the environmental sampling results that implicated water in support of the epidemiologic findings: For each of the following please identify if there are environmental sampling results available and describe the relevant results in the free text field.

- **Fecal Indicators** — Indicate findings related to fecal indicators in environmental samples.
- **pH** — Indicate findings related to pH readings recorded for environmental samples.
- **Temperature** — Indicate findings related to temperatures recorded for environmental samples.
- **Turbidity** — Indicate findings related to the turbidity measured for environmental samples. Turbidity describes the amount of suspended matter in the sample.
- **Residual/Free Disinfectant Level** — Indicate findings related to the residual or free disinfectant levels measured for environmental samples. This field refers to the level of disinfectant that has not reacted with other compounds in the water and is still available to effectively inactivate microorganisms in the Water. If only the total disinfectant level and the combined disinfectant level are known: (Residual or Free) = Total – Combined.
- **Combined Disinfectant Level** — Indicate findings related to combined disinfectant levels measured for environmental samples. This field refers to the level of disinfectant that has combined with organic compounds in the water and is no longer available to work as an effective disinfectant (e.g.,

chloramines). If only the total disinfectant level and the residual/free disinfectant level are known:
Combined Disinfectant = Total – (Residual or Free).

- **Etiologic Agents** — Indicate if the implicated etiologic agent or other etiologic agents were identified in environmental samples.
- **Other (*specify*)** — Indicate if there are additional relevant environmental sampling results that support epidemiologic findings.

Did historical or other environmental health evidence implicate water as the primary mode of transmission?

Indicate whether historical or other environmental evidence implicated water as the primary mode of transmission.

Would you like to attach environmental sampling results to this report?

Indicate whether environmental sampling results are available to attach to the NORS report. If yes, please attach these results.

Etiology and Isolates

Complete this section for all modes of transmission.

Is there at least one confirmed or suspected outbreak etiology(s)?

If there is at least one confirmed or suspected (based on epidemiological, clinical, or other evidence) outbreak etiology, select “Yes.” If there is no confirmed or suspected etiology, or it is unknown, select “No (unknown etiology).”

For foodborne outbreaks, outbreak etiology confirmation guidelines are available here:

http://www.cdc.gov/foodsafety/outbreaks/investigating-outbreaks/confirming_diagnosis.html.

Etiology

To enter an etiology in the NORS interface, select Add Etiology. For manual entry, enter the name of the pathogen(s) or chemical/toxin(s) known or suspected (based on epidemiological, laboratory, clinical, or other evidence) to be responsible for the outbreak. If available, include the serotype and other characteristics, such as virulence factors and metabolic profile. To view and add matching records from CaliciNet, select ‘Add etiology using: Suggested CaliciNet Etiologies’ (see <https://www.cdc.gov/nors/downloads/Lab-System-Training.pdf> for more guidance).

- **Genus** — For each suspected and confirmed etiology, list the genus name; chemicals/toxins are listed in this category. If the correct genus is not listed in the drop-down, select “Other bacterial,” “Other viral,” “Other parasitic,” or “Other chemical” as appropriate and then specify the etiology in the “Other Characteristics” field. If the specific etiology has not been determined, but there is clinical or epidemiological evidence to indicate that the agent was bacterial, viral, parasitic, or chemical in nature, select the corresponding Unknown value, as appropriate.
- **Species** — For each suspected and confirmed etiology, select the appropriate species name. If more than one species of a single genus is involved in an outbreak (e.g., both *Shigella sonnei* and *Shigella flexneri*), enter each one as a separate etiology. For viral outbreak etiologies, enter the genogroup in this field (e.g., norovirus genogroup II). If the species or genogroup is unknown, select “Unknown” where available.

- **Subtype** — For each suspected and confirmed etiology, select the subtype (e.g., serotype or genotype), if known. Make sure to provide subtype for all Shiga toxin-producing *Escherichia coli* (STEC) and *Salmonella enterica* outbreaks. If more than one serotype or genotype of a single species is involved in an outbreak, enter each one as a separate etiology. If the species or genogroup has been entered but the subtype is unknown, select “Unknown” where available.
- **Polymerase** — If norovirus is selected as a suspected or confirmed etiology, select the polymerase type, if known.
- **Capsid** — If norovirus is selected as a suspected or confirmed etiology, select the capsid type, if known. If no norovirus genotyping data is available, please select “unknown” for the capsid type.
- **Other characteristics** — List any other pertinent characteristics of the outbreak etiology. For example, additional serotype or genotype information that may not be captured elsewhere.
- **Total # positive primary cases** — Indicate the number of laboratory-confirmed primary cases associated with each etiology reported. If two specimens were positive for norovirus, but they were from the same case, then the etiology would have only one lab-confirmed case. For bacterial etiologies, this number should be the sum of the number of culture-confirmed and “CIDT (culture-independent diagnostic test) positive only” cases.
 - **# CIDT positive only** — Indicate the number of primary cases who had a CIDT positive result, such as detection of the pathogen on a PCR panel or antigen test, but were not culture-confirmed. Primary cases with a positive reflex culture should not be counted here. If a reflex culture was negative or not done, however, those cases with a positive CIDT may be counted here.
 - **# Culture-confirmed** — Indicate the number of culture-confirmed primary cases associated with each etiology reported. If two specimens were positive for *Salmonella*, but they were from the same case, then the specimens would count towards one culture-confirmed case only.
- **Confirmed or Suspected** — For each etiology, select whether the outbreak is laboratory confirmed or is suspected. You may enter multiple confirmed and/or suspected etiologies.
- **Detected In** — If the etiology was detected in one or more specimen(s), please select the specimen type(s): 1) patient specimen, 2) food sample, 3) environmental sample, 4) food worker specimen, 5) water sample, and/or 6) animal specimen. Multiple selections are permitted.

Note: For most etiologic agents reported here, CDC considers an outbreak to have a confirmed etiology if there are two or more lab-confirmed cases or, for foodborne outbreaks, if an organism is isolated from epidemiologically implicated food, although this varies by pathogen. However, because patients with botulism or who become ill after exposure to some marine toxins or certain chemicals often have distinct clinical symptoms, a physician's diagnosis is often sufficient, so laboratory confirmation is not always necessary to classify outbreaks of these illnesses as having a confirmed etiology. Therefore, for such outbreaks, CDC would consider the etiology confirmed if there are at least two cases (lab-confirmed or probable cases) with signs and symptoms meeting the clinical confirmation criteria. For such outbreaks, check the “Confirmed” box in the Etiology section even if the number of laboratory-confirmed cases is less than two.

Example: In an outbreak, *Campylobacter jejuni* was isolated from clinical specimens from 2 case-patients, and 3 case-patients tested positive for *Campylobacter* infection by culture-independent diagnostic testing only. Seven other case-patients were not tested, however, they developed illness consistent with *Campylobacter* infection and were exposed to the outbreak source.

For NORS reporting, indicate in the Primary Cases section:

Type of Primary Case	Count
Lab-confirmed primary cases	5
Probable primary cases	7
Estimated total primary cases	12

AND in the Etiology Section:

Genus	Species	Subtype (e.g., Serotype/ Genotype)	Other characteristics	Total # positive primary cases	Detected in*	Outbreak Etiology confirmed or suspected
<i>Campylobacter</i>	<i>Jejuni</i>			Total #: <u>5</u> # culture-confirmed: <u>2</u> # CIDT-positive only: <u>3</u>	1 — patient specimen	Confirmed

Isolates or Strains

To add an isolate or strain, indicate which CDC laboratory surveillance system (CaliciNet, CryptoNet, or PulseNet) contains laboratory data on the outbreak, if applicable. Otherwise, select Other, Unknown, or None.

For more information regarding NORS integration with CaliciNet, PulseNet, and NARMS, please refer to the Integrated Lab Systems training document on the NORS website at <https://www.cdc.gov/nors/downloads/Lab-System-Training.pdf>.

For information related to PulseNet, visit <http://www.cdc.gov/pulsenet/>. For information related to NARMS, visit <http://www.cdc.gov/narms/>. For information related to CaliciNet, visit <http://www.cdc.gov/norovirus/reporting/calicinnet/>.

Data on isolates that have not been reported to CaliciNet or PulseNet may be entered manually in the NORS Isolates table.

- **State lab: sample ID** — Provide the sample ID assigned by the state lab.
- **CDC lab: sample ID** — Provide the CDC-assigned laboratory isolate identification number. For CryptoNet isolates, enter the CryptoNet ID. For norovirus strains uploaded to CaliciNet, this is the CaliciNet key. The CaliciNet key is generated by the testing laboratory and consists of the four-digit year, the letters “SP,” and a four-digit sequential number (e.g., 2013-SP-0654). For PulseNet isolates, this is the PulseNet key.
- **CDC Lab: outbreak ID** — Provide the CDC-assigned outbreak ID or code. For norovirus strains uploaded to CaliciNet, this is the CaliciNet outbreak number. For PulseNet isolates, this is the PulseNet outbreak cluster code. This field is very important for distinguishing outbreak-associated cases from other sporadic cases and for outbreaks involving more than one state.
 - The CaliciNet outbreak number (CaliciOBNumber) is assigned by CDC when a submission is made through CaliciNet and consists of the four digit year, the letters “OB,” and a three digit sequential number (e.g., 2011-OB-458).

- A PulseNet outbreak or cluster code will have four numbers that make up the year and month of the cluster, two characters that represent the lab ID, three letters that are the serotype code, a dash, and then a unique cluster number (e.g., 0902MLJPX-4). PulseNet cluster codes are the same thing as OutbreakNet cluster codes.
- **CDC PulseNet Pattern: Enzyme 1** — This is the PulseNet pattern/PFGE pattern for the first enzyme.
- **CDC PulseNet Pattern: Enzyme 2** — This is the PulseNet pattern/PFGE pattern for the second enzyme.
- **Sequencing Information** — Provide any available sequencing information, such as allele code or whole genome sequencing ID. For CaliciNet isolates, this is the CaliciNet sequenced region (e.g., Region C).
- **Subtype information** — Indicate the genotype or serotype. For outbreaks entered into CaliciNet, this is the CaliciNet genotype (e.g., GII_3). For outbreaks in PulseNet, this is the serotype.
- **Source/sample type** — Indicate the type of sample, such as stool, blood, or water.

Settings

Setting(s) of Exposure

Complete this section if animal contact, environmental contamination, food, person-to-person, or indeterminate/unknown was identified as the primary mode of transmission. For waterborne outbreaks, refer to the section below titled, [*“Setting\(s\) of Exposure and Implicated Vehicle Description: Water.”*](#) For foodborne outbreaks, the setting of exposure is the location the implicated food was *eaten*. Setting(s) where food was prepared is captured in the next section.

For food and animal contact outbreaks, if exposure occurred in multiple settings, select all settings of exposure. Select a single setting unless exposures **among primary cases** occurred in multiple settings. If multiple categories could describe a single outbreak setting, choose the option that best applies and provide additional details in the “Setting of Exposure Remarks” textbox.

For person-to-person, environmental contamination, and indeterminate/unknown mode of transmission outbreaks with multiple settings, first select the **Major Setting**, or the setting of exposure that yielded the first illnesses in the outbreak. Then, select all other settings where primary or secondary cases were exposed.

Valid setting values for each mode are listed and defined in Appendix E. If the setting does not fall into one of the predetermined categories, select “Other” and enter the setting in the field that opens. For outbreaks associated with specific events, the setting of exposure should describe the physical location where exposure occurred; the type of event should be reported under [*Associated Events*](#).

Settings of exposure remarks

Indicate any other information related to the location of exposure. Proprietary information may be provided here.

Setting(s) of Preparation: Food

Complete this section if food was identified as the primary mode of transmission. Select the setting where food was prepared. If the setting does not fall into one of the predetermined categories, select “Other” and enter the setting in the field that opens.

Settings of preparation remarks

Indicate any other information related to the location of preparation. Proprietary information may be provided here.

Setting(s) of Exposure and Implicated Vehicle Description: Water

Implicated type(s) of water exposure

In the Type of Water Exposure section, check box(es) for the Type(s) of Water Exposure for water implicated in the outbreak investigation. Select all exposures that apply. Additional information about the outbreak may be attached to the outbreak report and/or included in the Remarks field in the specific type of water exposure section.

Note: Multiple water exposures can be selected.

- **Treated recreational water** — Select this type of exposure if illnesses were associated with recreational activities in treated water. Examples include: cryptosporidiosis from a swimming pool; legionellosis from a hot tub; and giardiasis from an interactive fountain. Recreational water exposures in home environments, such as fill-and-drain kiddie pools, also fall into this category, as do illnesses stemming from chemical exposures (e.g., chloramines at an indoor pool, pH imbalances, and releases of chlorine gas in the water).
- **Untreated recreational water** — Select this type of exposure if illnesses were associated with recreational activities in untreated water in a natural setting. Examples include: cercarial dermatitis from a freshwater pond; cryptosporidiosis from a lake; or norovirus infection from a swimming beach. A chemical exposure, such as contact with an algaecide on a freshwater pond, would also be included in this category.
- **Drinking water in public or individual water systems** — Select this type of exposure if the illnesses were associated with drinking water from a distribution system or bottled water. This includes showering and bathing exposures where the water source is part of a drinking water distribution system. For example, some non-recreational legionellosis outbreaks fall into this category. This type of exposure excludes water that is not part of a water distribution system (e.g., water from a stream by a hiking trail) regardless of whether the water was treated by an individual prior to being consumed.
- **Other exposures to water, including other environmental exposures to water** — Select this type of exposure if the illnesses were associated with water from a source other than a recreational venue or drinking water system. This type of water includes—but is not limited to—water used in cooling towers, industrial processes, agricultural processes, occupational settings, decorative or display settings (e.g., decorative fountains), and water consumed from natural sources such as back-country streams.
- **Undetermined exposures to water** — Select this type of exposure if the intended purpose or use of the water is unknown or the water exposure category could not be determined. This category is most commonly used for legionellosis outbreaks in which multiple water exposures may have been suspected (e.g., both cooling tower and drinking water system suspected), but no water exposures could be confirmed. If there are multiple water exposures confirmed in the epidemiologic and environmental investigation, please select all water exposures that apply (e.g., treated recreational

water, untreated recreational water, drinking water in public or individual water systems, or other exposures to water, including other environmental exposures to water).

Implicated water — recreational water venue description

- **Water venue** — Select the types of recreational water venues, such as a pool, spring, or lake/reservoir. The water type is further detailed in the Water Venue Subtype and Setting of Exposure fields.
- **Water venue subtype** — Indicate if a water venue is indoors, outdoors, or unknown.
- **Setting of Exposure** — Select where the exposure to water occurred (values and definitions are listed in Appendix E).

For treated recreational water outbreaks only:

- **Water venue treatment** — Select the usual water treatments provided at the venue, regardless of whether these treatments were operating correctly at or just prior to the time of the outbreak.
- **Treatment description** — Select the disinfection and filtration treatments that were used in the water venue.
- **Chlorine stabilizer levels** — Indicate the chlorine stabilizer levels at the time of the outbreak.

Implicated water — drinking water system description

- **Water system** — Select the drinking water system or type that were associated with the outbreak. Values and definitions are provided in Appendix E.
- **Public Water System EPA ID Number** — Provide the EPA reporting number to uniquely identify the water system within a specific state. The water system ID number can be found at <https://www.epa.gov/enviro/sdwis-search> by first selecting a state or territory and then searching by the water system name, the county, city, the population, or the status of the water system.
- **Water source** — Indicate the source of the water used in the drinking water system.
Note: CDC classifies all wells and springs as groundwater for the purposes of reporting waterborne disease outbreak data, except for groundwater under direct influence of surface water (GWUDI).
 - Direct influence must be determined for individual sources in accordance with criteria established by the state. GWUDI has been defined according to EPA regulation (40 CFR 141.2) as “any water beneath the surface of the ground with: a) a significant occurrence of insects or other macro-organisms, algae, organic debris, or large-diameter pathogens such as *Giardia duodenalis* or *Cryptosporidium*; or b) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.”
- **Water source description** — Provide additional details on the type of water source used in the drinking water system.
Note: some water source descriptions are combined, such as Lake/Reservoir and River/Stream.
- **Water system treatment** — Indicate the type of water treatment usually provided before water use or water consumption, regardless of whether these treatments were operating correctly at or just prior to the time of the outbreak.
Note: Treatment can occur at any point in the distribution system.
Note: If filtration usually occurred, specify whether it was done at the treatment plant or at home/point-of-use.
- **Treatment description** — Select the disinfection and filtration treatments that were used on the drinking water system.

- **Setting of exposure** — Indicate where the exposure to water occurred. Setting definitions are found in Appendix E.

Implicated water — other and undetermined exposures to water description

- **System or source of the water** — Select the source or system associated with the outbreak.
Note: If “Undetermined exposures to water” is entered, the system or source of the water defaults to “Unknown”. Please describe any suspected sources in the Remarks field.
- **Setting of exposure** — Indicate where the exposure to water occurred. Setting definitions are found in Appendix E.
- **Was the water system/source treated to reduce or prevent the risk of disease transmission** — Indicate whether the water system or source associated with the outbreak was treated, regardless of whether these treatments were operating correctly at or just prior to the time of the outbreak.
Note: Treatment can occur at any point of use.
Note: If filtration usually occurred, specify whether it was done at the treatment plant or at home/point-of-use.
- **How was the water in the system/source treated** — Indicate how the water in the system/source associated with the outbreak was treated.

Water setting of exposure remarks

Provide any other information related to the location of exposure.

Associated Events

Indicate whether exposure occurred at or was associated with a specific event or gathering. For example, if the outbreak occurred at an overnight science camp held on a college campus, the Setting of Exposure would be School/college/university and the Associated Event would be “Overnight youth camp.” Similarly, if exposure occurred at a wedding on a yacht, Ship/boat would be the Setting of Exposure and “Wedding” would be the Associated Event. Definitions and additional examples are provided in Appendix E.

Long-Term Care Outbreaks

If the outbreak occurred in a long-term care facility, please specify the type(s) of facility affected. Selection may be based on facility licensing, or the definitions provided below. You may select multiple options to describe a single setting in this section.

- **Nursing home/skilled nursing** — Select if the facility provides full-time healthcare support.
- **Assisted living** — Select if the facility provides assistance in daily tasks such as meal preparation, dressing, and grooming but does not provide full-time medical support. Limited medical services, such as medication management, may be provided.
- **Independent living (in continuous care community)** — Residential facilities that do not provide medical or personal care to residents, such as independent living communities, are NOT considered long-term care facilities in NORS. Continuous care communities are facilities in which long-term care and independent living units are housed on the same campus with shared management. For outbreaks in continuous care communities, select all levels of care affected, including independent living if applicable.
- **Intermediate care** — Select if the facility provides nursing and supportive care to residents on a non-permanent basis.
- **Memory care** — Select if the facility provides intensive, specialized care for residents with memory problems like dementia.

- **Other (*specify*)** — Select if the type of care is not listed and specify in the space provided.

School Outbreaks

Complete this section only if school is selected in “Setting(s) of Exposure” or “Setting(s) of Preparation.” Complete this section even if the outbreak did not involve students or the school lunch program.

Did the outbreak involve one or more schools?

Indicate if a single school or multiple schools were involved in the outbreak. If multiple schools were involved in the outbreak, enter the number of schools. If the number of schools involved in the outbreak are unknown, enter “Unknown.”

Grade affected

Indicate the grade level(s) of the students in the outbreak; select all that apply.

- **Grade school (grades K-12)** — Formal school for children from kindergarten to grade 12. Indicate all grades affected.
- **College/university/technical school** — Formal educational institution for students after high school.
- **Unknown or undetermined grade level(s)** — Indicate if the grade level of the involved students could not be determined.

Number of schools with public or private funding

Indicate the number of schools with public or private funding. If a single school was involved, write “1” next to the funding type.

- **Public** — Funded through the state or county.
- **Private** — Funded primarily through private funds (e.g., tuition paid by parents).
- **Unknown** — Funding for school is unknown.

Correctional/Detention Facility Outbreaks

Complete this section if correctional/detention facility is selected in “Setting(s) of Exposure” or “Setting(s) of Preparation”.

What was the name of the correctional/detention facility?

Enter the name of the facility. The facility name will be used in analyses of outbreak facilities and can be used to collect additional information such as facility size.

Is the facility run by the government or by a privately contracted business?

Indicate whether the facility is run by a government entity or a private business. If it is not known whether a government or private business runs the facility, select Unknown.

What was the type of facility?

Select the option that best describes the outbreak setting: federal prison, state prison, state/local jail, juvenile detention center, or immigration detention center. If the type of facility is not listed, select Other and specify in the space provided. If the type of facility is unknown, select Unknown.

Who is involved in food preparation at this facility?

For foodborne outbreaks, indicate whether inmates or other food workers were involved in food preparation at the facility in general. If it is not known who is involved in food preparation, select Unknown.

If contamination from a food worker was a contributing factor, were any of the following types of food workers implicated?

For foodborne outbreaks, indicate whether inmates or other food workers were implicated as a contributing factor as a source of food contamination. If the type of food worker implicated is not known, select Unknown.

Note: If contamination from a food worker was a contributing factor, cite C9, C10, or C11 in the food contributing factors section.

Attack Rates

This section is available for person-to-person, environmental contamination, and indeterminate/unknown outbreaks that occurred in a single setting. For the major setting of exposure, estimate the total number of persons likely exposed in that setting and the total number of persons ill for each of the below groups. If the outbreak occurred only in a single or limited number of sections of the major setting of exposure (i.e., exposure did not occur throughout the entire setting of exposure), only include the total number of residents or staff in that section or sections. For example, if an outbreak was restricted to a single ward of a hospital, report only patients and staff assigned to that ward as exposed.

If the outbreak occurred among a group of people who cannot be distinguished as staff and residents/guests (i.e., if only aggregate data is available or if the two categories do not apply to the exposure context), report all exposed persons as residents or guests. For example, if exposure occurs in a workplace, such as an office building, in which only employees are regularly present, consider all persons exposed and/or ill as residents or guests.

- **Residents, guests, passengers, patients, etc.** — Persons who do not work in the major setting, such as children attending daycare, residents of a nursing home, guests of a hotel, prison inmates, students at a school, etc.
- **Staff, crew, etc.** — Persons who work in the major setting, such as healthcare providers, teachers, camp counselors, prison guards, daycare employees, hotel staff, waiters, etc.

Animal Contact Section

Complete this section if “Animal Contact” was identified as the primary mode of transmission.

Animal Vehicle

Animal vehicle undetermined

Indicate if an animal vehicle was *not* identified for the outbreak. If you check this box, do not enter any animal-related information. An outbreak would be considered animal contact with undetermined vehicle when information gathered in the investigation strongly suggests a common animal source of infection, but a specific animal vehicle is not identified.

Note: If multiple animal vehicles were suspected, but none confirmed, do not select “Animal vehicle undetermined.” Instead, enter information for each suspected animal.

Reason(s) animal contact, but undetermined vehicle

If the animal vehicle is undetermined, enter the reason why the outbreak was considered animal contact, with an undetermined vehicle. The following types of evidence are regularly used to implicate vehicles in enteric disease outbreak investigations. All require judgment about the strength of evidence. Examples of these evidence types are provided here.

- **Epidemiologic evidence** — An animal exposure occurs more often in case-patients than in controls, or more often in case-patients than expected in the general population. Multiple case-patients report a common exposure venue, such as attending a fair or festival before becoming ill.
- **Laboratory evidence** — The pathogen or pathogen subtype causing illness is found on a farm suspected to be the source of the outbreak. The pathogen, or pathogen subtype, causing human illness is isolated from an animal to which case-patients were exposed.
- **Traceback investigation** — A common point of contamination is identified through reviewing records collected from stores or other venues where sick people bought or visited animals.
- **Environmental evidence** — A common point of exposure is identified through an environmental investigation or assessment conducted at a farm.
- **Other** — If the type of evidence cannot be found in the provided list, select “Other” and specify the type of evidence used to determine an animal contact outbreak.

Example: Several people report vomiting and diarrhea after visiting a petting zoo. No other common venues, settings, or exposures were identified among the ill persons. No particular animal was associated with illness in humans and no animals tested positive for the outbreak pathogen. This would be an *animal contact* outbreak with an *undetermined* vehicle. “Epidemiologic” should be chosen for the reason why the outbreak was determined to be from animal contact but has no specific vehicle.

Animal type

To add information on a new animal, click “Add Animal Vehicle.” This field allows for free text entry but will also provide suggestions for previously entered values.

Indicate a single implicated animal. If there was more than one implicated animal, add additional animal information by clicking “Add Animal Vehicle” again (e.g., if an outbreak involves both cattle and sheep, please enter both cattle and sheep separately). For poultry specifically, please differentiate between

juvenile and adult animals (e.g., baby chick, chicken). For turtles, please differentiate between small and large turtles if that information is known (e.g., turtle <4 inches, turtle ≥4 inches).

If there is any information or details relevant to animal type that you would like to add but are not able to provide in this section, please specify in Animal Contact Remarks.

Confirmed or suspected vehicle

Indicate whether the animal is confirmed or suspected. The types of evidence are listed in the section above under “Reason(s) animal contact, but undetermined vehicle.”

- **Confirmed vehicle** — Evidence implicates a source of infection. For point-source outbreaks linked to a single event or location, at least one type of evidence is needed. When exposures occur in multiple venues or across multiple counties or states, at least two types of evidence are needed to confirm that the case-patients were exposed to a common vehicle. For further guidance on multistate outbreaks, see [Appendix B](#).
- **Suspected vehicle** — At least one type of evidence provides considerable but not conclusive proof that an animal is the source of infection.

Reason(s) confirmed or suspected (enter all that apply)

Enter the reason(s) the vehicle was confirmed or suspected. The options and definitions are listed under “Reason(s) animal contact, but undetermined vehicle” located above and can also be found in Appendix E. “Other data” should not be selected for confirmed vehicles.

Example 1, confirmed vehicle: Three children visited the same county fair event on the same day. Within a week, the children were hospitalized with *E. coli* O157 infection. All three went to a calf petting zoo, but the parents of one child would not answer any additional interview questions, so other common exposures at the county fair could not be ruled out. Nevertheless, specimens from the calves tested positive for the outbreak strain. This would be an *animal contact* outbreak with a *confirmed* vehicle. “Epidemiologic” and “Laboratory” should be chosen for the “Reason(s) confirmed or suspected.”

Example 2, suspected vehicle: Seven children visited the same county fair event on the same day. Within a week, the children were hospitalized with *E. coli* O157 infection. Three of the seven reported visiting the calf petting zoo and no other common exposures were identified. Investigators from the state agriculture and health departments were sent to the fairgrounds, but the petting zoo area had been cleaned and calves were no longer present. This would be an *animal contact* outbreak with a *suspected* vehicle. “Epidemiologic” should be chosen for the “Reason(s) confirmed or suspected.”

Animal(s) experienced diarrhea or illness that could be related to outbreak illnesses? — Indicate whether the animal experienced diarrhea by selecting “Yes,” “No,” or “Unknown” for the animal(s) implicated for the outbreak.

Animal(s) imported to US? — Indicate if the animal(s) were imported to the United States.; if country of origin is known, please select “Yes, country” and select the appropriate country from the associated picklist. If the animal(s) was imported but country unknown, please select “Yes, country unknown.” If the animal(s) were not imported, or if unknown, please select “No” or “Unknown.”

Did the animal(s) implicated meet any of the following criteria? Select all that apply. — Indicate if the animal(s) implicated in the outbreak meet any of these criteria.

- **Backyard/residential livestock or poultry (e.g., backyard poultry)**
- **Commercial livestock or poultry (e.g., sheep, goat/kid, cattle)**
- **Pet/companion animal (e.g., domestic cats/dogs)**
- **Interactive exhibit animal (e.g., goats at a petting zoo, aquarium touch tank)**
- **Wild animal/wild game (e.g., deer, moose, wild turkey)**
- **Other (*specify*)**
- **Unknown**

How many animals were involved in the outbreak? — Indicate the total number of animals involved in the outbreak. If unknown, please select “Unknown.”

- **How many animals died during the outbreak period of interest?** — Indicate the number of animals that died during the outbreak period of interest. If unknown, please select “Unknown.”
- **How many animal deaths were presumed to be the result of outbreak-associated illness?** — Indicate the number of animals that died as a result of the outbreak. If unknown, please select “Unknown.”

Was the animal’s living environment implicated as a source of the outbreak? — Indicate if the animal’s environment is a potential source of the outbreak by selecting “Yes,” “No,” or “Unknown.”

If any outbreak-associated case-patients were exposed in the workplace, specify the occupation(s) of primary cases exposed in the workplace. Select all that apply.

- **Farm/dairy worker** — Indicate if farm/dairy worker was the occupation of any primary cases exposed in the workplace.
- **Pet store worker** — Indicate if pet store worker was the occupation of any primary cases exposed in the workplace.
- **Agricultural store worker** — Indicate if agricultural store worker (e.g., farm/rural supply store) was the occupation of any primary cases exposed in the workplace.
- **Processing plant/slaughterhouse worker** — Indicate if processing plant/slaughterhouse worker was the occupation of any primary cases exposed in the workplace.
- **Other (*specify*)** — If the occupation cannot be found in the provided list, select “Other” and specify the occupation(s) of primary cases exposed in the workplace.

Was pet food or animal feed implicated as a source? — Indicate whether pet food or animal feed was a potential source of the outbreak by selecting “Yes,” “No,” or “Unknown.”

- **If “Yes,” please specify** — Indicate the types of pet food or animal feed that were implicated. Select all that apply.
 - **Pre-packaged pet food** — Packaged at the processor level and received at the point of sale in a sealed bag or container.
 - **Homemade pet food** — Pet food prepared in a home or private setting, not by a commercially licensed entity.

- **Frozen or fresh feeder rodents or chicks** — Rodents or chicks purchased, raised, or obtained for use as animal feed (e.g., mice intended to be fed to snakes).
- **Pet treats or chews** — Edible product intended for consumption by pets that is not part of the staple diet of the animal (e.g., jerky treats, greenies, pig ears, bones).
- **Commercially prepared “raw” pet food** — Un-cooked and un-processed food products intended for animal consumption, packaged by a commercial entity and sold at retail.
- **Feed** (e.g., livestock feed, poultry feed, fish feed) — Food intended for food-producing animals (e.g., chicken pellets as poultry feed for backyard poultry).
- **Other** — If another type of food was implicated, please specify.
- **Unknown** — Indicate if the type of food is unknown.

Was the “Compendium of Measures to Prevent Disease Associated with Animals in Public Settings” used during the investigation? — Indicate whether the Compendium was used. The current document can be found among other published Compendia: <http://nasphv.org/documentsCompendia.html>. If unknown, please select “Unknown.”

Animal Contact Remarks

Enter any additional information regarding the animal exposure. Use this space to further specify any “Other” options chosen from previous questions in the Animal Section. If different animals were associated with different settings, provide further details here.

Fungal Disease Outbreaks

Complete this section for outbreaks of blastomycosis, coccidioidomycosis, histoplasmosis, or sporotrichosis. This section is only available if “Environmental contamination” is selected as the primary mode of transmission.

Treatments

Treated with systemic antibacterial medication before fungal infection was diagnosed

- **Number of cases** — Indicate the number of cases who received systemic (oral or intravenous) antibacterial medication after illness onset but before being diagnosed with a fungal infection.
- **Number of cases with information available** — Indicate the total number of cases for whom information on systemic antibacterial medication is available. If no information on systemic antibacterial medication is available, enter “0” for the number of cases with information available.

Treated with systemic antifungal medication

- **Number of cases** — Indicate the number of cases who received systemic (oral or intravenous) antifungal medication for treatment of a fungal infection. Examples of systemic antifungal medications include itraconazole, fluconazole, and amphotericin B.
- **Number of cases with information available** — Indicate the total number of cases for whom information on systemic antifungal medication is available. If no information on systemic antibacterial medication is available, enter “0” for the number of cases with information available.

Environmental Sampling

Environmental samples collected — Indicate whether any environmental samples such as soil, dust, or air were collected.

Results — If environmental samples were collected, describe the testing method(s) and the results in the space provided.

Fungal Contributing Factors

Indicate if any of the specified exposures or events were thought to have contributed to the fungal disease outbreak’s occurrence. Select all that apply.

- **Demolition, construction, or renovation** — Indicate if there was demolition, construction, or renovation to any type of building or other structure at or near the suspected exposure site(s).
- **Disruption of bat droppings** — Indicate if large accumulations of bat droppings were disrupted at or near the suspected exposure site(s).
- **Disruption of bird droppings** — Indicate if large accumulations of bird droppings were disrupted at or near the suspected exposure site(s).
- **Disruption of plant matter** — Indicate if disruption of any kind of plant matter such as trees, wood, or leaves, occurred at or near the suspected exposure site(s). Examples include gardening, tree trimming/removal, raking/burning leaves, etc.
- **Disruption of soil** — Indicate if soil disruption occurred at or near the suspected exposure site(s). Examples include gardening, digging, and tilling.

- **Natural disaster or phenomenon** — Indicate if a natural disaster or other large-scale environmental phenomenon was thought to have contributed to the outbreak. Specify details about the event, if known.
- **Bats** — Indicate if bats were present at or near the suspected exposure site(s). Specify the type(s) and location(s) of bats, if known.
- **Birds** — Indicate if birds were present at or near the suspected exposure site(s). Specify the type(s) and location(s) of birds, if known.
- **Other (*specify*)** — Indicate if other factors not listed above were thought to have contributed to the outbreak and specify details.
- **Unknown** — Select if no information about contributing factors is available.

Occupational Exposures

Specify major industry/industries — For outbreaks involving cases exposed in the workplace, indicate the primary industry/industries affected. If the outbreak did not involve workplace exposures, indicate “not applicable.” Industry refers to the type of business, such as a hospital, elementary school, clothing manufacturing, or restaurant. Additional resources for industry coding are available at: <https://www.cdc.gov/niosh/topics/coding/collecting.html>.

Specify major occupation(s) — For outbreaks involving cases exposed in the workplace, indicate the primary occupation(s) affected. If the outbreak did not involve workplace exposures, indicate “not applicable.” Occupation refers to the type of work, such as a registered nurse, janitor, cashier, or auto mechanic. Additional resources for occupation coding are available at: <https://www.cdc.gov/niosh/topics/coding/collecting.html>.

Personal Protective Equipment (PPE)

Wore PPE at any time during the suspected exposure

- **Number of cases** — indicate the number of cases who wore personal protective equipment (PPE) at any time during the event(s) or activity/activities in which they were suspected to have been exposed to the environmental fungi responsible for the outbreak.
- **Number of cases with information available** — indicate the total number of cases for whom information on PPE use is available. If no information on PPE use is available, enter “0” for the number of cases with information available.

Specify type of PPE — describe the type of PPE worn; for example, N-95 respirator, gloves, etc.

Food Section

Complete this section if “Food” was identified as the primary mode of transmission.

Food Vehicle

Food vehicle undetermined

Indicate if a food vehicle was *not* identified for the outbreak. An outbreak would be considered foodborne with undetermined vehicle when information gathered in the investigation strongly suggests a common food as the source of infection, but a specific food vehicle is not identified. If you check this box do not enter any food-related information.

Note: If multiple food vehicles were suspected, but none confirmed, do not select “Food vehicle undetermined.” Instead, enter information for each suspected food item.

Reasons foodborne, but undetermined vehicle

If the food vehicle is undetermined, enter the reason why the outbreak was considered foodborne, with an undetermined vehicle. The following types of evidence are regularly used to implicate vehicles in foodborne outbreak investigations. All require judgment about the strength of evidence. Examples of these evidence types are provided here.

- **Epidemiologic evidence** — A food exposure occurs more often in case-patients than in controls, or more often in case-patients than expected in the general population. Multiple unrelated case-patients report a common exposure venue, such as eating at the same restaurant, shopping at the same grocery store, or attending the same event before becoming ill.
- **Laboratory evidence** — The pathogen or pathogen subtype causing illness is found in a food item, restaurant, production facility, or farm suspected to be the source of the outbreak. The pathogen, or pathogen subtype, causing human illness is isolated from a food worker to which case-patients were exposed through prepared food.
- **Traceback investigation** — A common point of contamination is identified through reviewing records collected from restaurants, stores, or other venues where sick people ate, shopped, or visited.
- **Environmental evidence** — A common point of contamination is identified through an environmental investigation or assessment conducted at a restaurant, production facility, or farm.
- **Other (*specify*)** — If the type of evidence cannot be found in the provided list, select “Other” and specify the type of evidence used to determine that it was a foodborne outbreak.

Example: During a one-week period, a party of four persons, and then a party of seven persons, reported that they all developed vomiting and diarrhea within a few hours after eating at a vegetarian restaurant. No other common venues were identified. Local environmental health investigators visited the restaurant and noted some health violations, including restaurant staff not wearing gloves while preparing food, and pre-made food not being stored at a safe temperature. No food workers reported being ill during the week of or the week before the incidents. This would be considered a *foodborne* outbreak with an *undetermined* vehicle. “Epidemiologic” should be selected for “Reason(s) foodborne, but undetermined vehicle.”

Name of food vehicle?

To add food information, click “Add Food Vehicle”.

Indicate a single implicated food. If there was more than one implicated food, add additional foods by clicking “Add Food Vehicle”. Do not enter brand names or non-food descriptors (e.g., buffet, serving board, appetizer) in the food field. If you would like to report the brand of food, enter it into the Remarks field at the end of the NORS report. For additional information on how to search for a food item or enter new foods, see the training guides for the Food section. Information regarding method of processing or preparation can be added in their respective fields.

Confirmed or suspected vehicle

Indicate whether the vehicle was confirmed or suspected. The types of evidence are listed under “Reason(s) foodborne, but undetermined vehicle.”

- **Confirmed vehicle** — Evidence implicates a source of infection. For point-source outbreaks linked to a meal or a single event, at least one type of evidence is needed. When exposures occur in multiple venues or across multiple counties or states, at least two types of evidence are needed to ensure that the case-patients were exposed to a common vehicle. For further guidance on multistate outbreaks, see [Appendix B](#).
- **Suspected vehicle** — At least one type of evidence provides considerable but not conclusive proof that a food is the source of infection.

Reason(s) confirmed or suspected (enter all that apply)

Enter the reason(s) the vehicle was confirmed or suspected. The options and definitions are listed under “Reason(s) foodborne, but undetermined vehicle” located above and can also be found in Appendix E. “Other data” should not be selected for confirmed vehicles.

Example 1: Five ill persons from different counties in a large state were infected with *Listeria monocytogenes* during a two-month period. Isolates from these people were highly related to one another by whole genome sequencing and the ill persons were all of Russian descent. The clinical isolates were also highly related to *Listeria* isolated from herring fillets, but only two of the ill persons reported eating herring fillets in interviews. This is a *foodborne* outbreak with a suspected vehicle. Two types of evidence are needed to have a confirmed vehicle in this example because it is a multijurisdictional outbreak. “Laboratory” should be selected for “Reason(s) confirmed or suspected.”

Example 2: Twenty-one people became ill after attending a church potluck. The odds of eating a salad were significantly higher among ill than well persons; no other exposure was associated with illness. The salad preparer reported having a diarrheal illness two days before making the salad. This is a *foodborne* outbreak with a confirmed vehicle. “Epidemiologic” should be selected for “Reason(s) confirmed or suspected.”

Ingredient(s)

For each implicated food, click “Add Ingredient(s)” and indicate all known ingredients.

- If single ingredient foods (e.g., milk, cantaloupe) were identified, please enter these in the ingredients section.
- If contaminated ingredient(s) were identified, i.e., specific ingredients that were determined to be the source of contamination, select the corresponding check box under “Contaminated”. Multiple ingredients may be indicated as “Contaminated”. Epidemiologic information can be used to determine contaminated ingredients.
- If the ingredients of the food vehicle are known, but contaminated ingredients could not be identified, list all known ingredients and do not indicate any contaminated ingredients.

Example 1: The implicated food for an outbreak was coleslaw and the contaminated ingredient was cabbage. Enter “coleslaw” as “Name of Food” and enter “cabbage,” “mayonnaise,” “carrots,” and “raisins” as “Ingredient(s),” then select the “Contaminated” checkbox next to “cabbage”.

Example 2: The implicated food for an outbreak was beef lasagna, and ground beef was identified as the contaminated source. Report “lasagna, beef” as “Name of Food,” and enter “ground beef,” “pasta,” “mozzarella cheese, pasteurized,” and “tomato sauce, unspecified” as “Ingredient(s),” then select the “Contaminated” checkbox next to “ground beef”.

Example 3: Case-patients consumed vegetarian pizza and French fries, and the contaminated source ingredient was roma tomatoes (on the pizza). Enter “pizza, vegetable” as “Name of Food” and “tomatoes, roma,” “zucchini,” “mozzarella cheese, pasteurized,” and “bread, unspecified” as the “Ingredient(s),” then select the “Contaminated” checkbox next to “tomatoes, roma.” Because French fries were not identified as the source of contamination, French fries can be omitted from the report.

Example 4: The implicated foods for an outbreak were potato salad and fruit salad, and the source of contamination was not identified. Report “potato salad” as “Name of Food” and if the ingredients are known, list them in the “Ingredient(s)” field and leave the “Contaminated” fields blank. Also report “fruit salad” for “Name of Food,” list any known “Ingredient(s),” and leave the “Contaminated” fields blank.

Method of processing

For the food responsible for the outbreak (using the most specific information available – either the contaminated ingredient or a single-ingredient implicated food), indicate the method(s) of processing **prior to the point-of-service**. The method of processing intends to capture any modifications to the contaminated food before it arrives at the final point of use location. Multiple selections are permitted. If the specific contaminated ingredient or food is unknown, report “unknown.” If the product was not processed, report “none.” Examples are below.

Example 1: The implicated food for an outbreak was chef salad, and the contaminated ingredient was Swiss cheese, pasteurized. Report “chef salad” as “Name of Food,” enter “Swiss cheese, pasteurized” in “Ingredient(s)” and indicate as “Contaminated,” then enter “pasteurized” as method of processing.

Example 2: The food suspected to be the source of an outbreak was potato salad, and the contaminated ingredient was unknown. Report “potato salad” as “Name of Food,” provide any known ingredients in “Ingredient(s)” field, leave the “Contaminated” fields blank, and select “unknown” as the method of processing for the suspected potato salad.

Example 3: Patients became ill after consuming chicken quesadilla in a fast-food restaurant, and the contaminated ingredients were identified as both the pre-diced chicken and unpasteurized mozzarella cheese. Report “quesadilla, chicken” as “Name of Food,” enter “chicken” in “Ingredient(s)” and indicate as “Contaminated,” then enter the appropriate method of processing for the chicken, in this case, “shredded or diced.” Then also report “quesadilla, chicken” as “Name of Food,” enter “mozzarella, unpasteurized” in “Selected Ingredient(s)” and “Contaminated Ingredients” fields, then enter the appropriate method of processing for the cheese, in this case, “unpasteurized.”

Level of preparation

For the **implicated food**, indicate the level of preparation. Multiple selections are permitted for a single implicated food.

Method of preparation & service

For the **implicated food**, indicate the method of preparation **at the point-of-service** (retail: restaurant, grocery store). The method of preparation intends to capture any modifications to the implicated food after it arrives at the final point of use location, which will often be a retail establishment such as a restaurant or grocery store. In other words, how was the implicated food handled before it was served? Multiple selections are permitted.

Type of packaging

For the **implicated food(s)**, indicate type of packaging. Multiple selections are permitted.

Contaminated food imported to US?

Indicate whether the contaminated food was imported into the US from another country. If the contaminated food was imported, indicate the name of the country, if known. Select “No” if the contaminated food was not imported into the United States. Select “Unknown” if import status is not known.

Was product produced under domestic regulatory oversight?

Indicate whether the food product was produced under domestic regulatory oversight. Domestic regulatory oversight includes commercial products that are regulated by USDA, FDA, or locally produced food products for distribution regulated by local and state health authorities. Select “Yes” if the food product was produced under domestic regulatory oversight. For example, a loaf of bread produced by a licensed local bakery, commercially canned foods, etc. Indicate if it was regulated by the federal government or state authorities only. Select “No” if the food product was not produced under domestic regulatory oversight. For example, homemade cheese (produced in personal home — no federal/state oversight) sold in grocery stores or food establishments. If it is unknown whether the food product was produced under domestic regulatory oversight, then select “Unknown.”

Was product sold under US domestic regulatory oversight?

Indicate whether the food product was sold under domestic regulatory oversight. Domestic regulatory oversight includes commercial products that are regulated by USDA, FDA, or locally produced food products for distribution regulated by local and state health authorities. Select “Yes” if the food product was sold under domestic regulatory oversight. For example, a loaf of bread sold by a licensed local bakery, commercially canned foods, etc. Indicate if it was regulated by the federal government or state authorities only. Select “No” if the food product was not sold under domestic regulatory oversight. For example, homemade cheese sold from personal home with no state/federal oversight. If it is unknown whether the food was sold under domestic regulatory oversight, then select “Unknown.”

Does the location of preparation have a certified food protection manager?

Indicate whether a kitchen manager at the location of preparation was certified in food safety (e.g., ServSafe). If this information is not known, indicate unknown.

- **If yes, is the certified manager on-site during all hours of operation for the location of preparation?** — Indicate whether the certified manager is on-site during all hours of operation for the location of preparation. If this information is not known, indicate unknown.

Was an infectious food worker implicated as the source of contamination?

Indicate if a food worker was implicated as the initial source of contamination. A food worker refers to someone close to the point of service for the contaminated food, such as a restaurant cook. Any

information regarding food pickers working in fields or sorters working in packaging plants should be placed in the traceback comments field. Select “No” if the suspected point of contamination is “before preparation,” even if food workers helped propagate the outbreak. If unknown, select “Unknown.”

- If **Yes**, indicate the type of evidence that implicated the food worker, such as laboratory and/or epidemiologic evidence, or that prior experience makes this a likely source of contamination. Place any additional information in the Remarks field under Agency & Remarks.

Food Contributing Factors

For guidance on contamination, proliferation/amplification, and survival factors, see guidance diagram and text in [Appendix D](#).

Contributing factors (CFs) are defined as the practices that most likely contributed to a foodborne illness outbreak. The contributing factors identified help to determine what the root cause was for an outbreak in regards to the contamination, proliferation, or survival of microorganisms or toxins in the confirmed or suspected food vehicle. A CF should be cited only if the investigator has strong evidence that it actually occurred in this outbreak, rather than citing factors that have been documented in similar outbreaks or were observed as violations that did not necessarily contribute to this particular outbreak.

After consideration of all epidemiological, laboratory, environmental assessment, and traceback information available, if contributing factors for this outbreak could not be determined, then at the top of the contributing factors section, the box “Contributing factors are unknown” should be checked. If this box is checked, then the remainder of the contributing factors section should be left completely blank.

Please contact NORS-Foodborne@cdc.gov or NEARS@cdc.gov for questions on determining the contributing factors for an outbreak.

Food Contributing Factors Remarks

Indicate any other information relating to food contributing factors here.

Traceback & Recall

Complete this section if “Food” or “Animal Contact” was identified as the primary mode of transmission.

Traceback Investigation

A traceback is conducted by local, state, and/or federal authorities to determine where the contaminated food or animal came from, as far back to its origin or source as possible. Please include all traceback points that played a role in the contamination of the implicated vehicle or helped amplify or spread the contaminant, and any details regarding the implicated point of service/sale. To add traceback information, click “Add Traceback Point.”

- **Company name** — Enter the company name where the contaminated food or animal came from. Examples would be the name of a grocery store or a specific farm or ranch.
- **Company type** — Enter the type of facility where the food or animal came from. For example, a restaurant, retailer, farm, breeder, supplier/distributor, manufacturer, processor, producer, etc.

- **Country** — Enter the country where the contaminated food or animal came from.
- **State** — Enter the state where the contaminated food or animal came from. If not in the United States, leave the state field blank and enter the area, province, or region of the country in the Traceback and Recall Comments field.
- **Traceback findings** — Select from the list of traceback findings in Appendix E to indicate if the traceback point was the source of contamination, amplified contamination, point of service or sale, unknown, or none.

What federal agencies were involved in the traceback investigation? Select all that apply.

- **CDC** — Indicate if CDC was involved in the traceback investigation.
- **FDA** — Indicate if FDA was involved in the traceback investigation.
- **USDA/APHIS** — Indicate if USDA's Animal and Plant Health Inspection Service (APHIS) was involved in the traceback investigation.
- **USDA/FSIS** — Indicate if USDA's Food Safety and Inspection Service (FSIS) was involved in the traceback investigation.
- **Other (*specify*)** — If the federal agency cannot be found in the provided list, select "Other" and specify the federal agency that was involved in the traceback investigation.
- **None** — Indicate if no federal agencies were involved in the traceback investigation.

Recall

- **Check if any food product was recalled** — If any foods involved in the outbreak were recalled, check the box provided.
- **Exact item(s) recalled** — Enter the specific name of the item recalled (e.g., Company A peanut butter).
- **Link to official recall announcement(s)** — Provide link(s) to any official recall announcement(s).
- **Recall Comments** — Enter any additional information about the recall in the text box provided (e.g., lot numbers for the recalled item).

Water Section

Complete this section if “Water” was identified as the **primary mode of transmission**.

Supporting evidence

Estimated total number of persons with primary water exposure

Indicate the estimated number of people with the primary exposure, regardless of whether they became ill or not.

Note: The actual total number of persons with primary exposure is preferred if the information is available.

What evidence implicated the water exposure(s)?

Indicate the types of data collected during the outbreak investigation that provide supporting evidence of water exposure.

- **Epidemiologic data** — Epidemiologic data from the investigation, such as descriptive epidemiologic data or a study (e.g., case-control, cohort, cross sectional).
- **Clinical laboratory data** — clinical specimens were collected and tested (e.g., stool samples, blood samples, urine samples).
- **Environmental health data** — Environmental health data such as water sampling results or more formal inspection (e.g., pool inspection)
- **Prior experience makes this a likely source** — Previous outbreaks at this location, known issues with this water source, or other information make this a likely source.

Were data collected to estimate association?

Indicate “Yes” if an epidemiologic study (e.g., case-control, cohort, cross sectional) was conducted to calculate an odds ratio or relative risk for one or more exposures. If “Yes” is selected, please complete the Epidemiologic data table. If “No” or “Unknown” are selected, answer the follow-up question.

- **If no or unknown, was water the common source shared by persons who were ill?** — Indicate yes if an investigation identified water as the likely common source—for example, there were no other common exposures such as a food item that could account for the illnesses. Indicate no if the investigation did not support water being the common source. Indicate unknown water may have been the common source but there is no supporting evidence.

Epidemiologic data table

- **Exposure description** — Indicate the type of exposure, vehicle or variable that was evaluated by the epidemiological investigation.
Note: refer to the Appendix E for a list of common exposures. Select the exposure that best describes the water venue or enter a new exposure value if needed.
- **Attack rate** — The attack rate is the proportion of exposed persons who became ill out of the total number of people exposed, entered as n/N.
- **Effect measure** — The numeric value for the effect measure calculated during the epidemiologic study.
- **Type of effect measure** — The type of effect measure calculated during the epidemiologic study. Examples include odds ratios (OR) and relative risk (RR) calculations.
- **p-Value** — The exact p-Value that was calculated during the epidemiologic study. The p-Value can be used to evaluate the statistical significance of ORs and RRs. Only numeric values can be entered in NORS. Additional information can be provided in the Water Remarks, if needed.

Note: CDC uses a p-Value of 0.05 to evaluate the statistical significance of waterborne disease outbreak analyses. For example, CDC would consider the epidemiological evidence for waterborne illness to be strong if the odds of developing *Pseudomonas*-related folliculitis were higher in people who used a spa at a recreational facility compared to the odds in people who attended the same facility but did not use the spa, and the p-Value was less than 0.05 (e.g., OR=1.8, p=0.008).

- **95% confidence interval** - The confidence interval (CI) can be used to provide a range for the true value of an OR or RR and a level of confidence that the true value will be within that range. For example, when the upper and lower limits of a 95% CI are calculated for an OR, it is then possible for the investigator to state that he/she is 95% confident that the true OR will fall between those two numbers. A CI may also be used to evaluate the statistical significance in place of a p-Value – for example, if a 95% CI for an OR or RR does not contain the number one, the ratio measure is considered significant at p=0.05.

Water Remarks

Enter any additional information about supporting evidence for a water outbreak.

Legionella and Other Biofilm-Associated Pathogens Complete for Legionella, Pseudomonas, and nontuberculous Mycobacterium outbreaks

Please complete all applicable sections.

Biofilms are germs and the slime they secrete that stick to and grow on any continually moist surface. They provide a stable growth surface and an environment with nutrients for many germs, including *Legionella*. Factors affecting biofilm growth in water systems include water age/stagnation, water temperature, pH, inadequate levels of disinfectant, and sediment buildup. Documents obtained and reviewed during the investigation, such as water management program documentation, maintenance logs, and water test results, can aid in completion of this section.

Did the outbreak occur in a facility with any of the following characteristics? (Select all that apply)

Indicate if the outbreak occurred in a facility with any of the following characteristics.

- **>10 stories** — Indicate if the outbreak-associated facility had greater than 10 stories/levels. This points to the scale and complexity of the building water system.
- **“Green” components (e.g., low-flow engineering)** — Indicate if Green or Eco water system components are integrated into the building water system. Green components can potentially contribute to low-flow conditions within the building water systems.
- **Construction in building within the last six months** — Indicate if the outbreak-associated facility underwent any construction within the last six months. Construction may result in pressure drops, which can dislodge biofilm containing pathogens. Construction may also result in the closure of areas of the building water system, resulting in potential stagnation.
- **Construction nearby within the last six months** — Indicate if there was any construction nearby the outbreak-associated facility within the last six months. Construction may result in pressure drops, which can dislodge biofilm containing pathogens. Pressure drops or broken pipes (e.g., water main breaks) can result in the intrusion of *Legionella* or sediment that provides conditions favorable for pathogen growth. Construction may also result in the closure of areas of the distribution system, resulting in changes in the quality of water coming into the building.
- **Associated cooling towers** — Indicate if the outbreak-associated facility has a cooling tower. Cooling towers have been associated with outbreaks of Legionnaires’ disease.

- **Other associated aerosolizing devices (e.g., hot tub, decorative fountains, misters)** — Indicate if any aerosolizing devices are on or in the facility premises. These and similar devices can generate aerosols during use. Infrequent use and improper maintenance of these types of devices are known risk factors for biofilm pathogen growth and spread (e.g., inadequate disinfectant, temperature, system circulation).
- **Supplemental building disinfection system** — Indicate if the facility has a supplemental disinfection system. These systems may require additional permitting for potable water systems and need a trained operator.
- **Centralized hot water system** — Indicate if the outbreak-associated facility has a centralized hot water system. Biofilm-associated pathogens can grow in a wide range of temperatures, such as 77-120°F for *Legionella*.
- **Other (specify)** — If you do not find a notable building characteristic listed, select “Other” and type in additional characteristics in the free text field.
- **Unknown** — If you are unable to answer this question, specify “Unknown”.
- **None** — If the outbreak-associated facility does not consist of any of the listed characteristics, select “None”. Preferably, also select “Other” and specify notable building characteristics.

Facility characteristics remarks — Enter any additional information about the outbreak-associated facility in the text box provided.

Did the facility have a water management program in place before the outbreak?

Indicate if the facility had a water management program (WMP) before the outbreak.

If the facility did not have a WMP in place before the outbreak, select “No”. If you are unable to answer this question, specify “Unknown”.

• **If yes, which of these elements did the program include: (Select all that apply)**

If possible, retain a copy of the WMP for investigation records and indicate if the WMP included:

- **Multi-disciplinary water management program team** — Indicate if the facility WMP consists of a multi-disciplinary WMP team (e.g., industrial hygienists, building manager and owner, water treatment professionals).
- **Diagram of the building’s water system** — Indicate if a water system diagram for the facility is included in the facility WMP. These are simplified diagrams that illustrate water flow processes, as well as locations of devices like water heaters and hot tubs and where potentially hazardous conditions could occur.
- **Identification of control points/locations (e.g., areas of potential *Legionella* growth and spread)** — Indicate if the facility WMP includes documentation of areas within the water system that have the potential for biofilm growth and spread. These are locations where water parameter testing and control activities can be implemented to reduce risk.
- **Established control limits** — Indicate if the facility WMP specifies acceptable values (minimum, maximum, or ranges) for control measures that are being monitored to reduce the risk of biofilm growth and spread.
- **Regular water parameter testing (e.g., disinfectant, temperature, pH)** — Indicate if the facility WMP specifies regular water quality measurements. Records of water quality parameters over time can reveal trends, identify points of remediation, and outcomes of any changes that were made. Obtain copies for investigation records, if possible.
- **Plan for implementing corrective action (tasks taken when monitoring values are outside of control limits)** — Indicate if the facility WMP includes corrective action plans that would be

implemented when water monitoring measurements are outside the established control limits.

- **Method of plan verification (e.g., pathogen testing, clinical surveillance)** — Indicate if the facility WMP contains a procedure to confirm the WMP is being implemented as intended, such as routine *Legionella* testing in healthcare facilities.
- **Documentation of water management program performance and activities** — Indicate if there is documentation of facility WMP on-going implementation, any testing, and verification and validation activities.
- **Unknown** — If you are unable to identify any WMP elements, select “Unknown” (e.g., questions about WMP elements were not asked during the investigation).
- **None** — If the WMP does not have any of the listed elements, select “None” (e.g., facility reports having a WMP but cannot provide any evidence of WMP activities).
- **If yes, who designed the water management program: (Select all that apply).**
Indicate if the facility/device WMP(s) was designed by:
 - **Facility** — Indicate if the facility designed the WMP(s).
 - **Outside contractor** — Indicate if an outside contractor designed the WMP(s).
 - **Public health department** — Indicate if the public health department designed the WMP(s).
 - **Other (specify)** — If you identify a WMP designer that is not listed, select “Other” and type in additional information in the free text field.
 - **Unknown** — If you are unable to identify the WMP designer, select “Unknown”.

Were recommendations provided to the facility to decrease the risk of *Legionella* or other biofilm-associated pathogen exposure?

Indicate whether recommendations to decrease the risk of biofilm pathogen growth were provided to the facility.

If it is unclear if recommendations were provided, select “Unknown”. If recommendations were not applicable, select “Not applicable”.

Please see [CSTE Legionella Remediation .pdf](#) for additional clarification on remedial treatment for potable water systems.

- **If yes, please select all that apply**
 - **Flushing potable water system** — Indicate if flushing the potable water system was recommended. Flushing helps avoid sediment and biofilm formation and reduces water age.
 - **Superheat potable water system** — Indicate if superheating the potable water system was recommended. Notably, this is advised against for potable water systems because biofilm pathogens (i.e., *Legionella*), oftentimes, recolonize systems.
 - **Implement secondary potable water disinfection system** — Indicate if implementation of a secondary disinfection system within the facility was recommended. These systems may require additional permitting for potable water systems and need a trained operator.
 - **Implement point of use filter(s)** — Indicate if implementing point of use filter(s) was recommended. These will filter water at specific fixtures.
 - **Hyperchlorination of potable water system** — Indicate if hyperchlorination or chemical shock hyperdisinfection of the potable water system was recommended. Depending on the biofilm-associated pathogen of concern, disinfectant type, disinfectant amount, and contact time may vary.
 - **Hyperchlorination of recreational water system** — Indicate if hyperchlorination or chemical shock hyperdisinfection of the recreational water system was recommended. Depending on

the biofilm-associated pathogen of concern, disinfectant type, disinfectant amount, and contact time may vary.

- **Low level chlorination of potable water system** — Indicate if continuous hyperdisinfection with low level chemical treatment of the potable water system was recommended. Notably, continuous hyperdisinfection with low level chemical treatment is a temporary remediation approach and is different from supplemental disinfection, which involves the installation of permanent chemical injection equipment at the facility.
- **Water restrictions (e.g., discontinuing use of showers, faucets, or other water uses)** — Indicate if discontinued use of water anywhere in the facility was recommended.
- **Closure of an associated device (e.g., shutdown of a fountain, hot tub)** — Indicate if devices suspected or associated with a biofilm-associated pathogen outbreak were recommended to be shutdown.
- **Other (specify)** — If a recommendation was provided but is not listed, select “Other” and enter the recommendation in the free text box that appears.

Were samples tested for *Legionella* at a laboratory participating in a national proficiency program (e.g., ELITE, ELAP, AIHA)?

Indicate if water, environmental, or clinical specimens were tested for *Legionella* at a laboratory participating in a national proficiency program, including Environmental *Legionella* Isolation Techniques Evaluation (ELITE), Environmental Laboratory Accreditation Program (ELAP), and American Industrial Hygiene Association (AIHA). Select “No” if samples were tested in a laboratory that does not participate in a national proficiency program. Select “Unknown” if you do not know the participating status of the testing laboratory. Select “Not Applicable” if samples were not tested for *Legionella*.

Biofilm-associated pathogen remarks

Enter any additional information about the biofilm-associated pathogen outbreak in the text box provided.

Recreational Water – Treated Venue

Water quality management – treated recreational water

Was water venue(s) inspected in the 6 months prior to the outbreak?

If the outbreak involved one or more venues (e.g., a commercial water park and a community swimming pool) in one or more jurisdictions, answer “Yes” if **all venues** were inspected in the previous 6 months. Otherwise, answer “No” if even **one venue** was not inspected, or “Unknown” if inspection status is unknown for any venue.

Treated recreational water remarks — Enter any additional information about the treated recreational water outbreak in the text box provided.

Factors contributing to recreational water contamination and/or increased exposure in treated venues

Please select factors that were found during the investigation. Each contributing factor has two radio buttons so that the user can indicate whether the factor was “Documented/Observed” or “Suspected”.

- **Documented/Observed** — Select “Documented/Observed” if information is gathered during document reviews, direct observations and/or interviews.

- **Suspected** — Select “Suspected” if factors probably occurred but for which no documentation or observable evidence is available.
Note: in a multi-venue outbreak (e.g., multiple community pools), please select factors if they were documented/observed or suspected for at least one venue.
Note: if a contributing factor is not found in the list, users may enter it into the “Other contributing factors” field

Recreational Water – Untreated Venue

Water quality management – untreated recreational water

Did the venue meet recreational water quality standards at the time of the outbreak?

If the outbreak involved one or more venues (e.g., more than one lake) in one or more jurisdictions, answer “Yes” if **all venues** met recreational water quality standards according to the regulations for the state where the exposure occurred. Otherwise, answer “No” if even **one venue** did not meet quality standards. Answer “Unknown” if water quality status is unknown for any venue. Answer “Not Applicable” if none of the exposures occurred at venues in the reporting state or if state or local recreational water quality regulations were not applicable to the venue(s).

Do you have microbiological water quality testing results collected in the 3 months prior to the outbreak?

- Answer “Yes” if microbiological water quality testing results were available for any of the venues.
- Answer “No” if microbiological water quality testing results were not available for any of the venues.
- Answer “Unknown” if microbiological water quality testing results status was unknown for all the venues.

Untreated recreational water remarks — Enter any additional information about the untreated recreational water outbreak in the text box provided.

Factors contributing to recreational water contamination and/or increased exposure in untreated venues

Please select factors that were found during the investigation. Each contributing factor has two radio buttons so that the user can indicate whether the factor was “Documented/Observed” or “Suspected”.

- **Documented/Observed** — Select “Documented/Observed” if information is gathered during document reviews, direct observations and/or interviews.
- **Suspected** — Select “Suspected” if factors probably occurred but for which no documentation or observable evidence is available.
Note: in a multi-venue outbreak (e.g., a lake and its downstream river), please select factors if they were documented/observed or suspected for at least one venue.
Note: if a contributing factor is not found in the list, users may enter it into the “Other contributing factors” field

Drinking Water Systems

Water quality management

Did the drinking water system(s) have any monitoring violations in the 1 month prior to the outbreak?

Respond using the drinking water system quality regulations for the state or local jurisdiction where the drinking water exposure that was associated with the outbreak occurred.

- If one or more drinking water systems were involved in the outbreak (e.g., a community water system and an individual/private water system), answer “Yes” if **at least one** had a monitoring violation in the month prior to the outbreak. Otherwise, select “No” if **none** of the drinking systems involved had monitoring violations. Select “Unknown” if there were no known violations, but information is not available on one or more systems. Select “Not Applicable” if none of the involved water systems have monitoring requirements.

Did the drinking water system(s) have any maximum contaminant level (MCL) violations in the 1 month prior to the outbreak?

Respond using the maximum contaminant level (MCL) regulations for the state or local jurisdiction where the drinking water exposure that was associated with the outbreak occurred.

- If one or more drinking water systems were involved in the outbreak (e.g., a community water system and an individual/private water system), answer “Yes” if **at least one** had any maximum contaminant level (MCL) violations in the month prior to the outbreak. Otherwise, select “No” if **none** of the drinking systems involved had MCL violations. Select “Unknown” if there were no known violations, but information is not available on one or more systems. Select “Not Applicable” if none of the involved water systems have MCL regulations.

Did the drinking water system(s) have any violations in the 12 months prior to the outbreak?

Respond using the drinking water system regulations for the state or local jurisdiction where the drinking water exposure that was associated with the outbreak occurred.

- If one or more drinking water systems were involved in the outbreak (e.g., a community water system and an individual/private water system), answer “Yes” if **at least one** had a violation in the 12 months prior to the outbreak. Otherwise, select “No” if **none** of the drinking systems involved had monitoring violations. Select “Unknown” if there were no known violations, but information is not available on one or more systems. Select “Not Applicable” if none of the involved water systems have monitoring requirements.

Drinking water remarks — Enter any additional information about the drinking water outbreak in the text box provided.

Location in system contributing to drinking water contamination

There are three sections that collect contributing factor information about drinking water implicated in outbreak investigations: Source water, Water treatment/distribution system, and Outside water utility jurisdiction or at point of use.

Was there a problem with the quality of the source water?

Indicate whether there was a problem with the quality of the source water that contributed to drinking water contamination and/or increased exposure. For example, wastewater contamination of drinking water source (e.g., septic system contaminating groundwater, community sewer system malfunction or overflow).

Was water quality affected by a problem occurring with the water treatment or within the distribution system prior to entry into a building or house?

Indicate whether there was a problem with the water quality from the water treatment or distribution that contributed to drinking water contamination and/or increased exposure. For example, low water pressure event in the distribution system.

Note: For a community water system, distribution refers to the system of pipes and storage infrastructure under the jurisdiction of the water utility prior to the water meter or property line if the system is not metered. For non-community and non-public water systems, distribution refers to the system of pipes and storage infrastructure prior to entry into a building or house.

Was water quality affected by a problem occurring after the water meter or outside the jurisdiction of a water utility?

Indicate whether there was a problem after the water meter that affected water quality that contributed to drinking water contamination and/or increased exposure. For example, stagnation of water in building water system (e.g., sporadic occupancy, poorly designed water system, interruption in water supply).

Note: This includes a service line leading to a house/building, in the plumbing inside a house/building, during shipping/hauling, during storage other than in the distribution system, at the point of use, involving commercially-bottled water

Drinking water contributing factors

Please select factors that were found during the investigation. Each contributing factor has two radio buttons so that the user can indicate whether the factor was “Confirmed/Documented” or “Suspected”.

- **Documented/Observed** — Select “Documented/Observed” if information is gathered during document reviews, direct observations and/or interviews.
- **Suspected** — Select “Suspected” if factors probably occurred but for which no documentation or observable evidence is available.

Note: In an outbreak that involved multiple drinking water systems, please select factors if they were documented/observed or suspected for at least one drinking water system.

Note: If a contributing factor is not found in the list, users may enter it into the “Other contributing factors” field

Other exposures to Water, Including Other Environmental Exposures to Water

Implicated water – water exposure description

How did the exposure(s) to the water system/source occur?

Indicate how the cases were exposed to the implicated water system/source.

Other exposures to water remarks — Enter any additional information about other exposures to water outbreak in the text box provided.

Factors contributing to contamination and/or increased exposure to contaminated water

Select factors that were found during the investigation. Each contributing factor has two radio buttons so that the user can indicate whether the factor was “Confirmed/Documented” or “Suspected”.

- **Documented/Observed** — Select “Documented/Observed” if information is gathered during document reviews, direct observations and/or interviews.
- **Suspected** — Select “Suspected” if factors probably occurred but for which no documentation or observable evidence is available.
Note: In a multi-source outbreak (e.g., multiple parks), please select factors if they were documented/observed or suspected for at least one venue.
Note: If a contributing factor is not found in the list, users may enter it into the “Other contributing factors” field

Undetermined Exposures to Water

Implicated water – water exposure description

Which water exposure(s) were suspected in the outbreak?

Indicate which water exposures were suspected in the outbreak. Multiple selections can be made.

Undetermined exposures to water remarks — Enter any additional information about the undetermined exposures to water outbreak in the text box provided.

Factors contributing to contamination and/or increased exposure to contaminated water

Were any contributing factors documented or suspected in this outbreak investigation?

Indicate whether any contributing factors were identified. If “Yes”, please describe the contributing factors in the text box.

- **Contributing factors** — Enter any information about contributing factors in the text box provided.

Outbreak Detection & Investigation Methods

Complete this section for all modes of transmission.

Outbreak Detection

How was the outbreak initially detected? Select all that apply.

- **Public complaint to health department** — Select if members of the public contacted a local, territorial, or state health department with complaints regarding an event or facility (e.g., long-term care facility, school, restaurant) about a suspected outbreak.
- **Routine public health surveillance interview** — Select if, in the course of interviewing cases through pathogen-specific surveillance, multiple people reported similar exposures.
- **Notification from facility (e.g., long-term care facility, school, prison, restaurant)** — Select if workers or representatives of a facility reported an outbreak to a health department or CDC.
- **Healthcare provider report** — Select if a healthcare provider notified a health department or CDC of an increase in cases of a similar illness.
- **Notification from CDC lab system (e.g., PulseNet)** — Select if a CDC lab system notified a health department of an increase in related specimens.
- **Notification from other CDC group** — Select if other CDC group(s) notified a health department of increased reports of similar illness or reports of related specimens.
- **Notification from other public health lab** — Select if a public health lab notified a health department or CDC of an increase in related specimens.

- **Website or social media (e.g., Twitter, Yelp, Facebook)** — Select if a health department or CDC identified reports of similar illness through active or passive surveillance of social media platforms or other information from social media platforms.
- **Media report from news outlet** — Select if a health department or CDC identified an outbreak through a news/media outlet.
- **Other** — Select if a health department or CDC identified an outbreak through other communications. Please specify the method of outbreak detection in the space provided.

Investigation Methods

Indicate which investigation methods were used during the outbreak investigation. Select all that apply.

- **Epidemiologic**
 - **Binomial probability assessment** — This is an observational study to evaluate the relationship between an exposure (e.g., eating contaminated food) and an outcome (e.g., illness). There is just one category of study participants, people who have the outcome of interest (cases), and they are compared to an expected value based on population survey data.
 - **Case-control study** — This is an observational study to evaluate the relationship between an exposure (e.g., swimming in contaminated water) and an outcome (e.g., illness). There are two categories of study participants, people who have the outcome of interest (cases) and people who do not have the outcome of interest (controls).
 - **Case-case study** — This is an observational study to evaluate the relationship between an exposure (e.g., having direct contact with a sick person) and an outcome (e.g., illness). There are two categories of study participants, people who have the outcome of interest (cases) and people who have the outcome of interest but are unrelated to the cases in the study (i.e., different strains or different sources of exposure).
 - **Cohort study** — This is an epidemiological study used to assess outcomes (e.g., the development of gastrointestinal illness) in a group or cohort of people. Study participants are observed over time or counted to determine how many people experience the outcome of interest, and when the outcome occurred. Members in a cohort are defined according to their exposure profile (e.g., an exposed group and an unexposed group). In outbreak investigations, a cohort is frequently defined by membership in an organization (e.g., a Boy Scout troop attending a weeklong camp).
 - **Interviews only of ill persons** — Select if only ill persons were interviewed.
 - **Other** — Select if the epidemiologic investigation method used is not listed above and provide additional information about the investigation method in the space provided.
- **Environmental**
 - **Food preparation review** — Select if a review of the preparation practices associated with the implicated food was conducted.
 - **Water system assessment: drinking water** — Select if the environmental health investigation included an assessment of a drinking water system.
 - **Water system assessment: non-potable water** — Select if the environmental health investigation included an assessment of a non-potable water system (e.g., cooling tower, irrigation system).

- **Treated or untreated recreational water venue assessment** — Select if the environmental health investigation included an assessment of one or more treated or untreated recreational water source (e.g., swimming pool, lake).
- **Environmental, food, water, animal, or sample testing** — Select if the environmental health investigation included samples taken from the environment, food, water, or animal(s) for testing.
- **Other** — Select if the environmental investigation method is not listed above and provide additional information about the investigation methods in the space provided.
- **Traceback**
 - **Food, animal, or water investigation** — Select if the implicated food, animal, or water was investigated.
 - **Consumer purchase records (e.g., shopper card)** — Select if consumer purchase records, such as a shopper card, were investigated.
 - **Investigation at distributor, supplier, or production facilities (e.g., factory, treatment plant)** — Select if a factory, production, or treatment plant was investigated (e.g., poultry processing plant or water treatment facility).
 - **Investigation at original source (e.g., farm, water source)** — Select if the original source of an implicated food or water vehicle was investigated (e.g., poultry farm, lake, well).
 - **Other** — Select if the traceback investigation method is not listed above and provide additional information about the investigation methods in the space provided.

Investigation Methods Comments — Enter any additional information relevant to the method(s) used to investigate the outbreak.

Other Linked CDC Systems

- **National Environmental Assessment Reporting System (NEARS)** — This field is used to link NORS reports to corresponding environmental health investigation reports in NEARS. If one or more NEARS reports contain information for cases associated with this outbreak, enter the NEARS CDCReportID(s) into the fields provided. Similarly, NEARS includes a field to link relevant NORS reports as applicable (e.g., two or more human cases are reported).
- **One Health Harmful Algal Bloom System (OHHABS)** — This field is used to link NORS reports to corresponding OHHABS reports. If one or more OHHABS reports contain information for cases associated with this outbreak, enter the OHHABS CDCReportID(s) into the fields provided. Similarly, OHHABS includes a field to link relevant NORS reports, as applicable (e.g., two or more human cases are reported).

Interventions

Complete this section for all modes of transmission.

Were any interventions recommended or implemented to help stop the outbreak?

If at least one intervention was recommended or implemented, select “Yes.” If no interventions were recommended or implemented, select “No.” If unknown, select “Unknown” and proceed to question 2 below.

- **If no, explain why none were recommended or implemented.** — Briefly explain why no interventions were recommended or implemented in this outbreak.
- **If yes, indicate what type(s) of interventions were recommended or implemented to help stop the outbreak?**

In the tables below, indicate whether each listed intervention type was:

- **Recommended and implemented** — Intervention was recommended by the public health or investigating agency and implemented by the facility or venue. This option also applies if an intervention was implemented by the facility or venue before an official recommendation could be made, but that intervention would have been recommended.
- **Recommended, not implemented** — Intervention was recommended by the public health or investigating agency but not implemented by the facility or venue.
- **Recommended, unknown if implemented** — Intervention was recommended by the public health or investigating agency, but it is unknown if the intervention was implemented.
- **Implemented, not recommended** — Intervention was implemented by the facility or venue but was not—and would not have been—recommended by the public health or investigating agency.
- If an intervention was neither recommended nor implemented or else this information is unknown, leave the field for that intervention blank.

Intervention Type

The table has been organized by intervention type into six sections: Facility/site/venue and equipment, People, Animals, Food, Water, and Other. Any intervention type can be selected for any mode of transmission. If an intervention was either recommended or implemented but does not appear in the table below, select “Other (*specify*)” as the intervention type and specify in the space provided.

Example: an outbreak of norovirus transmitted person-to-person occurs at a school, and self-service at mealtimes was discontinued as one of several interventions to help reduce spread. Intervention type “Self-service discontinued” under the “Food” header should be entered as “recommended and implemented.”

Any Point of Intervention OR Point of Exposure

The first table column should be completed for outbreaks spread by all modes of transmission. For person-to-person, environmental contamination, and waterborne outbreaks, use this column to indicate all interventions recommended or implemented. For animal contact, foodborne, and indeterminate/unknown mode outbreaks, only enter interventions recommended or implemented at the point of exposure.

Recommended or implemented at other points of intervention

The “Point of distribution”, “Point of processing”, and “Source” columns should be completed only for animal contact, foodborne, and indeterminate/unknown outbreaks to indicate interventions recommended or implemented at those points.

- **The point of distribution** — indicate interventions recommended or implemented at the point of distribution of the suspected outbreak vehicle, e.g., at the shipping facility or transportation equipment.
- **The point of processing** — indicate interventions recommended or implemented at the point of processing of the suspected outbreak vehicle, e.g., at the pasteurization plant.
- **The source** — indicate interventions recommended or implemented at the suspected source of the outbreak vehicle, e.g., at the farm or oyster bed.

Were any public communications released for this outbreak? (e.g., press release or outbreak notice)

Indicate whether any public communications were released by any official entity involved in the outbreak or its investigation.

- **If yes, by what group(s)? *Select all that apply.***
 - State/local/territorial health department
 - Other state/local/territorial government agency — if selected, specify the government agency or agencies in the space provided
 - Federal government — e.g., CDC or FDA
 - Industry — e.g., a trade association
 - Facility — e.g., the restaurant or hotel where the outbreak occurred
 - Other — if selected, please specify in the space provided

Remarks about interventions — Enter any additional remarks about interventions either recommended or implemented in the space provided.

Remarks

General Remarks

Briefly describe important aspects of the outbreak, including dates, not covered elsewhere in the NORS report. Proprietary information may be provided in this field.

Note: CDC encourages states to attach any documents that provide additional information to the outbreak report under Attachments in the right-hand panel. Examples of possible documents to attach are unpublished agency reports, Epi-Aid reports, publications, etc. Additional documents may be attached to a report as they become available.