

Salmonellosis

Non-typhoidal *Salmonella* spp

NOTE: This chapter focuses on salmonellosis that is not typhoid. For information about typhoid fever (caused by *Salmonella typhi*) refer to the chapter titled “Typhoid Fever.”

NOTE: Changes to this chapter include updated case definitions (**highlighted in yellow**).

DISEASE REPORTABLE WITHIN 24 HOURS OF DIAGNOSIS

Per N.J.A.C. 8:57, healthcare providers and administrators shall report by mail or by electronic reporting within 24 hours of diagnosis, confirmed cases of salmonellosis to the health officer of the jurisdiction where the ill or infected person lives, or if unknown, wherein the diagnosis is made. A directory of local health departments in New Jersey is available at <http://localhealth.nj.gov>



Salmonellosis (Non-typhoidal *Salmonella* spp)

1 THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Salmonellosis refers to disease caused by any species of bacteria in the genus *Salmonella* other than *Salmonella typhi* (the *Salmonella* species that causes typhoid fever).

B. Clinical Description and Laboratory Diagnosis

The most common symptoms of salmonellosis are diarrhea (sometimes bloody), stomach cramps, fever, nausea, and sometimes vomiting. Dehydration may be severe, especially among infants and the elderly, and invasive disease may occur. Infection may also present as septicemia, an abscess, arthritis, or cholecystitis.

Laboratory diagnosis is based on isolation of organism from feces and blood during the acute stage of infection and from feces for several days or weeks after acute phase or during asymptomatic infections.

C. Reservoirs

Salmonella bacteria are widely distributed in the animal kingdom, including livestock, pets, poultry and other birds, reptiles, and amphibians. Most infected animals are chronic carriers. Humans can also be sources of infection.

D. Modes of Transmission

Salmonella species are transmitted via the fecal-oral route. The most common mode of transmission is ingestion of food or water that has been contaminated with human or animal feces. This includes raw or undercooked poultry, eggs and egg products, undercooked meats, and raw milk or milk products; however, any food contaminated with the bacteria can be a source of infection. For example, outbreaks have been traced to the consumption of raw fruits and vegetables. In addition, reptiles such as turtles, iguanas and lizards are chronic carriers of these bacteria and can be sources of infection. Transmission from person to person can occur especially among household contacts, preschool children in daycare, and the elderly and

developmentally disabled living in residential facilities. Transmission can also occur through certain types of sexual contact (e.g., oral-anal contact).

E. Incubation Period

The incubation period can vary from six to 72 hours but is usually about 12 to 36 hours, although incubation periods longer than three days have been documented.

F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes *Salmonella* bacteria in his or her stool. This can last from days to months, depending on the serotype, but rarely lasts more than one year. Treatment with certain antibiotics can prolong carriage.

G. Epidemiology

Salmonellosis has a worldwide distribution, with approximately five million cases occurring annually in the United States alone. About 60% to 80% of cases are sporadic, but large outbreaks have occurred in institutional settings and nationwide from common food sources. In New Jersey, approximately 1100 cases of salmonellosis are reported annually to the New Jersey Department of Health (NJDOH).

2 CASE DEFINITION

A. Clinical Description

An illness of variable severity commonly manifested by diarrhea, abdominal pain, nausea, and sometimes vomiting. Asymptomatic infections may occur, and the organism may cause extra intestinal infections.

B. Laboratory Criteria for Diagnosis

Confirmed:

Isolation of *Salmonella* from a clinical specimen.

Probable:

Detection of *Salmonella* from a clinical specimen using Culture-independent diagnostic testing (CIDT)

C. Case Classification

CONFIRMED

A case that meets the confirmed laboratory criteria for diagnosis.

PROBABLE

A case that meets the probable laboratory criteria for diagnosis, OR a clinically compatible case that is epidemiologically linked to a case that meets the confirmatory or probable laboratory criteria for diagnosis.

POSSIBLE

Not used.

3 LABORATORY TESTING AVAILABLE

The NJDOH Public Health and Environmental Laboratories (PHEL) will test stool and food specimens for the presence of *Salmonella* in an outbreak situation. PHEL will also confirm and serotype isolates of *Salmonella* obtained from clinical and food specimens at other laboratories. It is required that laboratories submit all *Salmonella* isolates to PHEL within three days for typing to aid in public health surveillance (NJAC 8:57-1.6 [f]).

The general policy of PHEL is to test only food samples implicated in suspected outbreaks, not in single cases (except when botulism is suspected). The health officer may suggest that the holders of food implicated in single case incidents locate a private laboratory that will test food or store the food in their freezer for a period of time in case additional reports are received. However, a single, confirmed case with leftover food consumed within the incubation period may be considered for testing. All testing of food and clinical samples must have prior approval from staff from the Infectious and Zoonotic Disease Program (IZDP).

NOTE: Isolates of *Salmonella* must be submitted to NJDOH, Division of Public Health and Environmental Laboratories within three days of isolation.

4 PURPOSE OF SURVEILLANCE AND REPORTING AND REPORTING REQUIREMENTS

A. Purpose of Surveillance and Reporting

- To identify transmission sources of public health concern (e.g., contaminated food or water) and to stop transmission from such sources.
- To identify whether the patient may be a source of infection for other persons (e.g., daycare worker or attendee, food handler, healthcare provider) and, if so, to prevent further transmission.
- To provide education about reducing the risk of infection.

B. Laboratory Reporting Requirements

The New Jersey Administrative Code (NJAC 8:57-1.6) stipulates that laboratories report using the Communicable Disease Reporting and Surveillance System [CDRSS]) all cases of salmonellosis to the local health officer having jurisdiction over the locality in which the patient lives, or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located. The report shall contain, at a minimum, the reporting laboratory's name, address, and telephone number; the age, date of birth, gender, race, ethnicity, home address, and telephone number of person tested; the test performed; the date of testing; the test results; and the healthcare provider's name and address.

C. Healthcare Provider Reporting Requirements

The New Jersey Administrative Code (NJAC 8:57-1.4) stipulates that healthcare providers report (by telephone, by confidential fax, or in writing) all cases of salmonellosis to the local health officer having jurisdiction over the locality in which the patient lives or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located. The report shall contain the name of the disease; date of illness onset; and name, age, date of birth, race, ethnicity, home address, and telephone number of the person they are reporting. Additionally, name, address, institution, and telephone number of reporting official, and other information as may be required by NJDOH concerning a specific disease should be reported.

D. Local Board of Health Reporting and Follow-Up Responsibilities

The New Jersey Administrative Code (NJAC 8:57-1.7) stipulates that each local health officer must report the occurrence of any case of salmonellosis within 24 hours of receiving a report from a laboratory or healthcare provider to the NJDOH, Infectious and Zoonotic Disease Program (IZDP). A report must be filed electronically over the internet using the confidential and secure CDRSS.

5 CASE INVESTIGATION

A. Forms

It is the health officer's responsibility to investigate the case by interviewing the patient and others who may be able to provide pertinent information. To obtain relevant information please use the *Salmonellosis Case Report Worksheet* available at:

http://nj.gov/health/cd/documents/salmonella_worksheet.pdf

- When asking about exposure history (food, travel, activities, and so forth), use the incubation period for salmonellosis (six to 72 hours). Specifically focus on the period beginning a minimum of six hours before the case's onset back to at least 72 hours before

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onset. If possible, record any restaurants at which the case-patient ate, including food item(s) and date consumed.

- In a case of an outbreak, immediately notify the NJDOH by telephone at 609.826.5964 during business hours and 609.392.2020 after business hours and on weekends and holidays.
- After completing the worksheet, enter the information into the Communicable Disease Reporting and Surveillance System (CDRSS).

B. Entry into CDRSS

The mandatory fields for all cases in CDRSS include: disease, last name, county, municipality, gender, race, ethnicity, case status, report status.

C. Other Reporting/Investigation Issues

1. Case report forms DO NOT need to be mailed to NJDOH as long as mandatory fields in CDRSS are completed and exposure notes are entered.
2. Once LHD completes its investigation and assigns a report status of “LHD CLOSED,” NJDOH will review the case. NJDOH will approve the case by changing the report status to “DHSS APPROVED.” At this time, the case will be submitted to CDC and the case will be locked for editing. If additional information is received after a case has been placed in “DHSS APPROVED,” you will need to contact NJDOH to reopen the case. This should be done only if the additional information changes the case status of the report.
3. Every effort should be made to complete the investigation report in CDRSS within three months of opening a case. Cases that remain open for three months or more and have no investigation or update notes will be closed by NJDOH.

6 CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (NJAC 8:57-1.10)

1. Minimum Period of Isolation of Patient

Food handlers with salmonellosis are to be excluded from food handling duties until diarrhea has resolved and they have produced two negative stool cultures collected 24 hours or more apart but not sooner than 48 hours after completion of antibiotic therapy, if antibiotics are given.

2. Minimum Period of Quarantine of Contacts

Contacts with diarrhea who are food-handling facility employees shall be considered the same as a case-patient and handled in the same fashion. No restrictions otherwise.

NOTE: A food handler is ANY person directly preparing or handling food. This can include patient care providers or childcare providers.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

1. Daycare/School

Because salmonellosis may be transmitted person to person through fecal-oral transmission, it is important to follow cases of salmonellosis in a daycare or school setting. General recommendations include the following:

- Children and staff with salmonellosis should be excluded until they become asymptomatic.
- Students or staff who handle food and have salmonellosis (symptomatic or not) must not prepare food until their diarrhea has resolved and they have produced two negative stool cultures collected 24 hours or more apart but not sooner than 48 hours after completion of antibiotic therapy, if antibiotics are given.
- In outbreak situations, additional precautions may be implemented including exclusion of cases until negative stool specimens are obtained.
- Infection control practices including frequent hand washing should be implemented.

2. Community Residential Programs and Long-Term Care Facilities

Actions taken in response to a case of salmonellosis in a community residential program will depend on the type of program and the level of functioning of the residents. In outbreak situations, special precautions may be warranted.

In long-term care facilities, residents with salmonellosis should be placed on standard (including enteric) precautions until their symptoms subside. Staff members who give direct patient care (e.g., feed patients, give mouth or denture care, or give medications) are considered food handlers and are subject to food handler restrictions (see section 6A above). In addition, staff members with salmonellosis who are not food handlers should not work until their diarrhea has resolved.

In residential facilities for the developmentally disabled, staff and clients with *Salmonella* infection must refrain from handling or preparing food for other residents until their diarrhea has resolved and they have produced two negative stool cultures collected 24 hours or more apart but not sooner than 48 hours after completion of antibiotic therapy, if antibiotics are

given. In addition, staff members with salmonellosis who are not food handlers should not work until their diarrhea has resolved.

If an outbreak is detected or suspected in a long-term care facility or community residential program, the facility must report the outbreak to its LHD. Facility management should also report any such outbreak to the Division of Long-Term Care Compliance and Surveillance Program of Department of Health by telephone 800.792.9770 or fax 609.633.9060.

7 OUTBREAK SITUATIONS

Reported Incidence Is Higher Than Usual/Outbreak Suspected

If the number of reported cases of salmonellosis in a city/town is higher than usual, or if an outbreak is suspected, investigate to determine the source of infection and mode of transmission. A common vehicle (such as water, food, or association with a daycare center) should be sought and applicable preventive or control measures should be instituted. Control of person-to-person transmission requires special emphasis on personal cleanliness including proper hand hygiene and sanitary disposal of feces. IZDP staff can help determine a course of action to prevent further cases and can perform surveillance for cases that may cross several jurisdictions and therefore be difficult to identify at a local level.

8 PREVENTIVE MEASURES

A. Environmental Measures

Implicated food items must be removed from the environment. A decision about testing implicated food items can be made in consultation with IZDP and the Food and Drug Safety Program (FDSP). FDSP can help coordinate pickup and testing of food samples. If a commercial product is suspected, FDSP will coordinate follow-up with relevant outside agencies (e.g., US Food and Drug Administration, US Department of Agriculture).

NOTE: The role of FDSP is to provide policy and technical assistance with the environmental investigation such as interpreting the New Jersey Food Code, conducting a hazardous analysis and critical control point risk assessment, initiating enforcement actions, and collecting food samples.

B. Personal Preventive Measures/Education

To avoid future exposures, recommend that individuals:

- Always wash their hands thoroughly with soap and water before eating or preparing food, after using the toilet, after changing diapers, and after touching their pets or other animals (especially reptiles).
- After changing diapers, wash the child's hands as well as their own.
- In a daycare setting, dispose of feces in a sanitary manner.
- Keep food that will be eaten raw, such as vegetables, from becoming contaminated by animal-derived food products.
- Avoid letting infants or young children touch reptiles, such as turtles or iguanas, or their cages.
- If elderly or immunocompromised, avoid reptiles when choosing pets.
- In a daycare facility or school, do not use reptiles as classroom pets.
- Make sure to thoroughly cook all food products from animals, especially poultry and eggs, and avoid consuming raw or cracked eggs, unpasteurized milk, or other unpasteurized dairy products.
- Avoid sexual practices that may permit fecal-oral transmission. Latex barrier protection should be emphasized as a way to prevent the spread of salmonellosis to sexual partners as well as to prevent the exposure to and transmission of other pathogens.

Additional Information

A "Salmonellosis FAQ" can be obtained through the NJDOH web site at:
<http://nj.gov/health/cd/salmone/index.shtml>.

Additional information including educational materials can be obtained from the FDA's Center for Food Safety and Applied Nutrition Web site at www.cfsan.fda.gov.

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