

# Shigellosis

*Shigella* spp

**NOTE: Changes to this chapter include updated case definition (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 shigellosis 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/>.

If the health officer is unavailable, the healthcare provider or administrator shall make the report to the Department by telephone to 609.826-5964 between 8:00 A.M. and 5:00 P.M. on non-holiday weekdays or to 609.392.2020 during all other days and hours.



# 1 THE DISEASE AND ITS EPIDEMIOLOGY

### A. Etiologic Agent

Shigellosis is caused by any bacteria in the species *Shigella*. There are four *Shigella* species or serogroups: *S. dysenteriae* (Group A), *S. flexneri* (Group B), *S. boydii* (Group C), and *S. sonnei* (Group D). Group A has 13 serotypes, group B has 6 serotypes, group C has 18 serotypes, and group D has 1 serotype. Geographic distribution and antimicrobial susceptibility varies with different species.

### B. Clinical Description

The most common symptoms of shigellosis are diarrhea (sometimes bloody), fever, nausea, vomiting and stomach cramps. Dehydration may be severe, especially in infants and the elderly. Asymptomatic infections can also occur. The disease is usually self-limiting, lasting four to seven days. The severity of the illness and the case-fatality rate are usually a function of the host and species, with the very young and the elderly experiencing the most severe illness. Antibiotics shorten the duration and severity of the illness and the duration of pathogen excretion; they should be used in individual cases if warranted by the severity of the illness or to protect contacts (e.g., in daycare centers or institutions) when epidemiologically indicated. *S. dysenteriae* is usually associated with more severe disease and complications including toxic megacolon and hemolytic-uremic syndrome. Laboratory diagnosis is based on isolation of *Shigella* from feces or rectal swabs.

### C. Reservoirs

*Shigella* is transmitted via the fecal-oral route. The most common mode of transmission is person-to-person spread of the bacteria from a case or carrier. A very small dose of *Shigella* is needed to cause illness (probably ten to 200 organisms). Individuals shedding the bacteria may also contaminate food by failing to properly wash their hands before food handling activities, potentially causing large numbers of people to become ill. Person-to-person spread typically occurs among household contacts, preschool children in daycare, and the elderly and developmentally disabled living in residential facilities. Transmission can also occur person to person through certain types of sexual contact (e.g., oral-anal contact) and contact with a contaminated inanimate object.

#### D. Modes of Transmission

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#### E. Incubation Period

The incubation period can vary from 12 to 50 hours but is usually about one to four days. It can be up to a week for *S. dysenteriae*.

#### F. Period of Communicability or Infectious Period

The disease is communicable for as long as infected persons excrete *Shigella* in their stool. This usually lasts for about four weeks from onset of illness. Asymptomatic carriers may transmit infection; rarely, the carrier state may persist for months or longer. Effective antibiotic treatment has been shown to decrease the shedding period to a few days.

#### G. Epidemiology

Shigellosis has a worldwide distribution, with approximately 600,000 deaths reported annually throughout the world. Most of these deaths occur in children younger than ten years of age. Secondary attack rates can be as high as 40% in households. Outbreaks occur in daycare centers, among men who have sex with men, and in jails. Outbreaks have also been caused by contaminated imported food.

In New Jersey, approximately 600 cases are reported annually to the New Jersey Department of Health and Senior Services (NJDOH). *S. sonnei* is the most common *Shigella* species reported in New Jersey.

## 2 CASE DEFINITION

**NOTE: Case definitions establish uniform criteria for identifying and classifying cases for reporting purposes and should NOT be used for establishing clinical diagnoses or determining the standard of care necessary for a particular patient. For many conditions of public health importance, action to contain disease should be initiated as soon as a problem is identified; in many circumstances, appropriate public health action should be**

undertaken even though available information is insufficient to determine a clinical diagnosis or case status.

## A. Case Definition

### 1. Clinical Description

An illness of variable severity characterized by diarrhea, fever, nausea, cramps, and tenesmus. Asymptomatic infections may occur.

### 2. Laboratory Criteria for Diagnosis

Supportive laboratory evidence: detection of *Shigella spp.* or *Shigella*/EIEC in a clinical specimen using a CIDT.

Confirmatory laboratory evidence: isolation of *Shigella spp.* from a clinical specimen.

### 3. Case Classification

#### **CONFIRMED:**

A case that meets the confirmed laboratory criteria for diagnosis. Isolation of *Shigella* from a clinical specimen from any site of the human body, regardless of symptoms.

#### **PROBABLE:**

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

#### **POSSIBLE:**

Not used.

#### **COMMENT**

Both symptomatic and asymptomatic infections at sites other than the gastrointestinal tract, if laboratory confirmed, are considered confirmed cases that should be reported.

## B. Differences from CDC Case Definition

There are no differences in the case definitions.

## **3 LABORATORY TESTING AVAILABLE**

The Public Health and Environmental Laboratories (PHEL) will test stool specimens for the presence of *Shigella* and will also confirm and serotype isolates of *Shigella* obtained from clinical specimens at other laboratories. PHEL requests that all laboratories submit all isolates cultured for typing to aid in public health surveillance (NJAC 8:57-1.6[f]). For more information contact PHEL at 609.530.8392.

After authorization from the Division of Epidemiology, Occupational and Environmental Health, PHEL will test implicated food items from a cluster or outbreak.

## **4 PURPOSE OF SURVEILLANCE AND REPORTING AND REPORTING REQUIREMENTS**

### **A. Purpose of Surveillance and Reporting**

- To identify whether the patient may be a source of infection for other persons (e.g., a diapered child, daycare attendee or food handler) and, if so, to prevent further transmission.
- To identify transmission sources of public health concern (e.g., a restaurant or a commercially distributed food product) and to stop transmission from such sources.

### **B. Laboratory Reporting Requirements**

The New Jersey Administrative Code (NJAC) 8:57-1.8 stipulates that healthcare providers and laboratories report (by telephone, by confidential fax, over the Internet using the Communicable Disease Reporting System [CDRSS] or in writing) all cases of shigellosis 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.

### **C. Healthcare Provider Reporting Requirements**

Same as above for Laboratory (section 4B).

### **D. Health Officer Reporting and Follow-up Responsibilities**

NJAC 8:57-1.8 stipulates that each local health officer must report the occurrence of any case of shigellosis. A report can be filed electronically over the Internet using the confidential and secure CDRSS.

## 5 CASE INVESTIGATION

- A. 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 assist local health departments in investigations of shigellosis cases, an investigation checklist can be found at: [http://nj.gov/health/cd/documents/topics/shigel/shigella\\_checklist.pdf](http://nj.gov/health/cd/documents/topics/shigel/shigella_checklist.pdf). To obtain relevant information please use the *Shigellosis Case Report Worksheet* available at: [http://nj.gov/health/cd/documents/topics/shigel/shigella\\_worksheet.pdf](http://nj.gov/health/cd/documents/topics/shigel/shigella_worksheet.pdf)

### B. Other Reporting/Investigation Issues

Once LHD completes its investigation and assigns a report status of "LHD CLOSED" in CDRSS, 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.

Institution of disease control measures is an integral part of the case investigation. It is the health officer's responsibility to understand, and, if necessary, institute the control guidelines listed in section 6, Controlling Further Spread.

## 6 CONTROLLING FURTHER SPREAD

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

Food handlers with shigellosis are excluded from handling food until they no longer have symptoms and they have at least **two** successive negative stool cultures (collected 24 or more hours apart, but not sooner than 48 hours following completion of antimicrobial therapy).

**NOTE: A case of shigellosis is defined by the reporting criteria in section 2A of this chapter.**

### B. Protection of Contacts

Contacts with diarrhea who are foodhandlers shall be isolated and quarantined in the same manner as a patient (see above paragraph) and handled in the same fashion.

**NOTE: A food handler is any person directly preparing or handling food. This can include a patient or a childcare provider.**

## C. Managing Special Situations

### 1. Daycare

Because shigellosis may be transmitted person to person through fecal-oral transmission, it is important to carefully follow up cases in a daycare setting.

General recommendations include the following:

- When *Shigella* infection is identified in a childcare attendee or staff person, stool specimens from other symptomatic attendees, staff and household members must be cultured. Symptomatic persons with positive stool cultures for *Shigella* may receive antibiotic therapy. The decision to use antibiotics is based on the severity of the case and potential to spread infection.
- Children and staff members with shigellosis should be excluded until their diarrhea has resolved and two successive stool cultures are negative for *Shigella species*. These stool specimens should be collected 24 hours or more apart but not sooner than 48 hours after completion of antibiotic therapy.
- Infection control procedures including proper handwashing, sanitary disposal of diapers and feces, proper food handling and environmental sanitation should be implemented.
- If more than one person is infected, cohorting should be considered until stool tests are negative.

### 2. School

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

- Students or staff with *Shigella* infection who have diarrhea should be excluded until their diarrhea has resolved.
- Students or staff with *Shigella* infection who do not handle food, have no diarrhea, and are not otherwise sick may remain in school if special precautions are taken.
- Students or staff who handle food and have *Shigella* infection (symptomatic or not) must not prepare food until their diarrhea has resolved and they have **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.

### 3. Community Residential Programs

Actions taken in response to a case of shigellosis in a community residential program will depend on the type of program and the level of functioning of the residents. In addition to reporting the outbreak to the local health department, facility management should also report any such outbreak to the NJDOH Division of Health Facility Survey and Field Operations by telephone at 800.792.9770 or fax at 609.633.9060.

In long-term care facilities, residents with shigellosis should be placed on standard (including enteric) precautions until their symptoms subside and they have **two** consecutive negative cultures for *Shigella*. 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 *Shigella* infection who are not food handlers should not work until their diarrhea has resolved.

In residential facilities for the developmentally disabled, staff and clients with shigellosis must refrain from handling or preparing food for other residents until their diarrhea has resolved and they have 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 *Shigella* infection who are not food handlers should not work until their diarrhea has resolved.

## 7 OUTBREAK SITUATIONS

If the number of reported cases in an institutional setting or jurisdiction is higher than usual for the time of year, an outbreak might be occurring. In accordance with NJAC 8:57, the local health department must be notified immediately. This situation may warrant an investigation of clustered cases to determine a course of action to prevent further cases. In contrast to what routinely occurs at the local level, CDS staff can perform surveillance for clusters of illness that may cross several jurisdictions and thereby be better able to assess the extent of an outbreak during its infancy.

## 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 CDS and the NJDOH 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 [FDA], 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.**

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 under special circumstances.



## B. Personal Preventive Measure/Education

To avoid future exposure, recommend that individuals:

- Always wash their hands thoroughly with soap and water before eating or preparing food, after using the toilet, and after changing diapers.
- After changing diapers, wash the child's hands as well as their own.
- In a daycare setting, dispose of feces in a sanitary manner.
- When caring for someone with diarrhea, scrub their hands with plenty of soap and water after cleaning the bathroom; helping the person use the toilet; or changing diapers, soiled clothes or soiled sheets.
- Avoid sexual practices that may permit fecal-oral transmission. Latex barrier protection should be emphasized as a way to prevent the spread of shigellosis to sexual partners as well as to prevent the exposure to and transmission of other pathogens.
- Keep flies from contaminating food.
- Anyone with diarrhea should not use a pool or swim in a pond.

## C. International Travel

The following recommendations can be helpful to travelers in developing countries:

- “Boil it, cook it, peel it, or forget it.”
- Drink only bottled or boiled water, keeping in mind that bottled carbonated water is safer than noncarbonated water.
- Ask for drinks without ice unless the ice is made from bottled or boiled water. Avoid popsicles and flavored ices that may have been made with contaminated water.
- Eat foods that have been thoroughly cooked and are still hot and steaming.
- Avoid raw vegetables and fruits that cannot be peeled. Vegetables such as lettuce are easily contaminated and are very hard to wash well.
- Peel your own raw fruits or vegetables and do not eat the peelings.
- Avoid foods and beverages from street vendors.

**NOTE: For more information regarding international travel see the CDC's website at: <http://www.cdc.gov/travel>.**

## Additional Information

A Shigellosis Fact Sheet can be obtained at the NJDHSS Website at <http://www.state.nj.us/health>. Click on the “Topics A to Z” link and scroll down to the subject *Shigellosis*.

The formal CDC surveillance case definition for shigellosis is the same as the criteria outlined in section 2A of this chapter. CDC case definitions are used by state health departments and CDC

to maintain uniform standards for national reporting. For reporting to NJDOH, always refer to section 2A.

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