

Shigellosis

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To identify outbreaks and potential sources of ongoing transmission.
2. To prevent further transmission from such sources.
3. To educate people about how to reduce their risk of infection.

B. Legal Reporting Requirements

1. Health care providers: notifiable to local health jurisdiction within 24 hours.
2. Health care facilities: notifiable to local health jurisdiction within 24 hours.
3. Laboratories: *Shigella* species notifiable to local health jurisdiction within 24 hours; specimen submission required – culture (2 business days).
4. Local health jurisdiction: notifiable to DOH Communicable Disease Epidemiology Section (CDES) within 7 days of case investigation completion or summary information required within 21 days.

C. Local Health Jurisdiction Investigation Responsibilities

1. Begin investigation within one work day.
2. Administer appropriate infection control recommendations (see Section 6A).
3. Report all confirmed and probable cases to CDES. Complete the shigellosis case report form (<http://www.doh.wa.gov/notify/forms/shig.pdf>) and enter the data into the Public Health Issues Management System (PHIMS).
4. Ensure that labs forward the first isolate from each patient to the Public Health Laboratories (PHL) for speciation and sub-typing.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Shigella are Gram-negative bacteria with four species: *S. sonnei* (Group D), *S. flexneri* (Group B), *S. dysenteriae* (group A), and *S. boydii* (Group C). Species are further subdivided into multiple serotypes. *S. sonnei* is the most common type reported in Washington. *S. flexneri* is seen primarily in persons who have come or returned from developing countries; or who have had contact with such individuals. *S. dysenteriae* and *S. boydii* infections are rare in Washington.

B. Description of Illness

Shigellosis is characterized by acute onset of diarrhea, usually accompanied by moderate to high fever and cramping abdominal pain; sometimes with nausea and vomiting. Illness is usually self-limited, lasting 3–10 days. Asymptomatic carriage lasting weeks or months may occur, although less often than with salmonellosis. Diarrhea is often marked by blood, mucus, or pus in the stools. Infections can be severe,

particularly in young children and the elderly. Mild and asymptomatic infections also occur.

C. Shigellosis in Washington State

DOH has received between 115 and 185 reports of shigellosis per year in recent years, with no deaths reported.

D. Reservoirs

Infected humans are the reservoir, with rare infections of non-human primates.

E. Modes of Transmission

Transmission is fecal-oral with a very small infectious dose; as few as 10–100 organisms may be sufficient. Common means of transmission include:

1. Person-to-person transmission within households and child care facilities or to other close contacts whenever hand washing after defecation is inadequate. Care givers are also at risk of infection if there is fecal contamination of hands.
2. Sexual contact, including oral-anal contact.
3. Fecally contaminated inanimate objects (fomites).
4. Food that is contaminated during harvest, transportation, preparation, or serving, particularly food served without cooking (e.g., lettuce, cold sandwiches).
5. Contaminated and inadequately treated drinking water.
6. Ingestion of contaminated and untreated recreational water.

F. Incubation Period

1–4 days, rarely as short as 12 hours or as long as 7 days.

G. Period of Communicability

Patients are communicable as long as organisms are excreted in feces, typically 1–4 weeks after onset. Rarely, individuals can remain carriers for several months. The period of excretion is usually shortened by appropriate antibiotic therapy.

H. Treatment

Fluid and electrolyte replacement (oral or IV) is the mainstay of treatment for patients with shigellosis. Persons with mild infections usually recover quickly without antibiotic treatment. Antibiotics to which the isolated strain is susceptible will shorten the duration of illness and period of communicability. Anti-motility agents are contraindicated, as they may prolong the illness.

3. CASE DEFINITIONS

A. Clinical Criteria for Diagnosis

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

B. Laboratory Criteria for Diagnosis

Isolation of *Shigella* from a clinical specimen.

C. Case Definition (2005)

1. *Probable*: a clinically compatible case that is epidemiologically linked to a confirmed case.
2. *Confirmed*: a case that is laboratory confirmed.

Note: Both asymptomatic infections and infections at sites other than the gastrointestinal tract, if laboratory confirmed, should be reported. Extra-intestinal infections are rare however, and isolate identification from sources other than stool should be confirmed by a reference laboratory or Public Health Laboratories.

4. DIAGNOSIS AND LABORATORY SERVICES

A. Diagnosis

The diagnosis is made by identification of *Shigella* in a clinical specimen, usually stool.

B. Tests Available at Washington State Public Health Laboratories (PHL)

Laboratories in Washington are required to submit *Shigella* isolates to PHL. PHL performs speciation, serotyping, and pulsed-field gel electrophoresis (PFGE) on all submitted isolates. Finding isolates with the same PFGE pattern may be consistent with but does not prove a common source, whereas isolates with different PFGE patterns presumptively came from different sources.

In an outbreak or other special situation, PHL can culture stool for *Shigella* species. Contact Communicable Disease Epidemiology Section for approval prior to submitting stool for culture.

Note that PHL require all clinical specimens have two patient identifiers, a name **and** a second identifier (e.g., date of birth) both on the specimen label and on the submission form. Due to laboratory accreditation standards, specimens will be rejected for testing if not properly identified. Also include specimen source and collection date.

D. Specimen Collection

For stool culture, use a sterile applicator swab to collect stool, insert the swab into Cary-Blair transport medium, push the cap on tightly, label the tube with two identifiers (e.g., name and date of birth), and mail immediately.

Please enclose a completed PHL Microbiology form (available at: <http://www.doh.wa.gov/EHSPHL/PHL/Forms/Microbiology.pdf>) with all isolates and stool specimens.

Instructions for handling food specimens can be found in the PHL Directory of Services: <http://www.doh.wa.gov/ehsphil/PHL/Forms/DirServ30.pdf>.

5. ROUTINE CASE INVESTIGATION

A. Identify Potential Sources of Infection

Interview the case and/or others who may be able to provide pertinent information. Ask

about possible exposures 1–7 days before onset of symptoms, including:

1. Contacts or household members with a diarrheal illness. Obtain the name, phone number or address, and clinical information of the ill person. Anyone meeting the probable case definition should be reported and investigated in the same manner as a confirmed case.
2. Attendance or employment at a child care facility by the case or a household member of the case. (If the case or a household member attends or works at a child care facility, see Section 7: Managing Special Situations).
3. Restaurant or other food service meals. Obtain the name of the restaurant, and date and location of the meal.
4. Public gathering where food was consumed. Obtain the date, location, and sponsor of the event.
5. Recreational water exposure. Obtain the date and location of swimming, playing, or other exposure to lakes, streams, swimming pools, water parks or wading pools where water may have been swallowed.
6. Source(s) of drinking water as well as water from streams or lakes (either consumed purposefully or accidentally during work or sports activity). Water used only after boiling need not be included. If a public water supply is suspected consult Communicable Disease Epidemiology Section.
7. Travel outside Washington or the United States, or contact with others who have traveled outside the United States. Determine dates of travel.
8. Sexual contact involving potential fecal exposure.

B. Identify Contacts who Work in Sensitive Occupations

Determine if any household member or close contact attends or works at a child care facility; or works as a food handler or health care worker. If so, see Sections 6 and 7.

C. Environmental Evaluation

A sanitary inspection is indicated if a commercial food service facility, child care center, or public drinking water supply is suspected as the source of infection.

6. CONTROLLING FURTHER SPREAD

A. Infection Control Recommendations

1. Hospitalized patients should be treated using standard precautions. Contact precautions should be used for diapered or incontinent persons for the duration of the illness or to control institutional outbreaks.
2. The case should be educated regarding effective hand washing, particularly after using the toilet, changing diapers, and before preparing or eating food. Meticulous hand washing is required to prevent transmission.
3. School Restrictions: Children should not attend school as long as they have diarrhea.
4. Work or Child Care Restrictions: Persons should not work as food handlers, child care or health care workers, or attend child care as long as they have diarrhea.

The Washington State Retail Food Code requires food employees to report *Shigella* infections to their employer and requires food establishments to restrict infected workers from areas where unwrapped food or beverages are prepared and sold (if serving general populations) or exclude from the establishment (if serving highly susceptible populations) until approved to be released by the local health authority (WAC 246-215-251) (5).

In general, such workers and children with shigellosis require two negative stool specimens before returning to work or child care. The stool specimens should be collected 24 hours apart and not sooner than 48 hours after the last dose of antibiotics, if antibiotics were given.

5. If a suspected source of infection is identified and has the potential for transmitting infection to a defined population, advise those individuals on measures to avoid exposure (e.g., boil water or drink bottled water until private well is decontaminated).

B. Case Management

Stool cultures to document that fecal shedding of the organism has stopped are not routinely indicated, except for the purpose of lifting work and child care restrictions.

C. Contact Management

1. Symptomatic contacts: Symptomatic household members and other close contacts should seek medical attention from their regular providers as needed. Persons in contact with a probable or confirmed case are probable cases, and should be managed and reported as such on separate forms. Cultures are indicated if a symptomatic contact is part of a common source outbreak, or is a food handler, healthcare worker, child care worker, or child care attendee.
2. Asymptomatic contacts: Testing an asymptomatic household member or other close contacts who work as a food handler, healthcare worker, child care worker, or attends child care should be considered.
3. Education: Contacts should be educated about transmission routes, symptoms and effective hand washing, particularly after using the toilet, changing diapers, and before preparing or eating food.

D. Environmental Measures

See Section 7 for environmental measures in special situations.

7. MANAGING SPECIAL SITUATIONS

A. Possible Foodborne or Waterborne Outbreaks

Call Communicable Disease Epidemiology Section immediately if you suspect a common-source outbreak.

B. Case Attends or Works at a Child Care Facility

1. Interview the operator and review written attendance records to identify other possible cases among staff or attendees during the previous month. (WAC170-295-3030 specifies that the operator should keep a log of illnesses).
2. Review food handling, hand washing techniques, and diaper changing practices with the operator and staff.

3. If other cases are suspected, collect stool specimens from attendees and staff with a history of diarrheal illness in the past 2 weeks.
4. Exclude cases (including those who are asymptomatic) from child care facilities until they have two negative stool cultures collected at least 24 hours apart and at least 48 hours after discontinuation of antibiotics.
5. Parents of children in the same child care group as a case should be notified of the occurrence of shigellosis in the group. Day care operators are required to notify these parents that their child was exposed to a communicable disease through a letter or posted notification (WAC 170-295-3030). The local health jurisdiction may use this notification as an opportunity to ask parents about symptoms in their child and add the following elements to the notification:
 - Children should be monitored carefully for signs of illness such as diarrhea, abdominal pain, nausea, vomiting and fever.
 - The daycare operator or local health jurisdiction should be notified should symptoms occur.
 - A symptomatic child should not be brought to the daycare facility or placed in any other group of children.
 - Information on the illness and how transmission can be prevented.
6. If more than one case is suspected among attendees or workers inspect the facility.
7. Instruct the facility operator to call immediately if new cases of illness occur.
8. Follow-up with the child care center to ensure that surveillance and appropriate prevention measures are being carried out. Manage newly symptomatic children as outlined above.
9. Closure of the facility should be considered if it has been shown that transmission is occurring within the facility and if exclusion and sanitation controls are not adequate to stop ongoing transmission. Before closing a facility, assess the potential for spread to other day care settings in the community by dispersal of the children. Parents should be cautioned regarding placing their children in other child care groups.

C. Case Resides at a Health Care or Residential Care Facility

Determine if there has been any unusual incidence of diarrheal illness within the past month. If so, investigate these reports to identify possible common-source outbreaks or any continuing sources of exposure. If indicated, conduct a sanitary inspection of the facility. The extent of further investigation depends on circumstances.

8. ROUTINE PREVENTION

A. Vaccine Recommendations: None.

B. Prevention Recommendations

1. Stress proper hand hygiene, including attention to fingernails.
2. Emphasize hand washing after diapering and proper diaper disposal in households and child care centers.

3. Promote frequent and supervised hand washing among incompletely toilet trained children.
4. Provide adequate soap and individual towels in institutional or public settings.
5. Prevent fecal contamination of food and water.
6. Reduce crowding in institutional settings.
7. Avoid fecal exposure during sexual contact.
8. Persons with shigellosis should not use recreational water venues (e.g., pools, lakes, interactive fountains, water parks) until 2 weeks after symptoms resolve.
9. Provide adequate toilet facilities at communal swimming or wading locations.
10. When traveling, drink only treated or boiled water and eat only cooked hot foods or fruits you peel yourself.

ACKNOWLEDGEMENTS

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UPDATES

October, 2010:

Section 7B: Added recommendations for management of case(s) in a child care facility.

January 2011:

The Legal Reporting Requirements section has been revised to reflect the 2011 Notifiable Conditions Rule revision.