Shigallosis

Signs and Symptoms	• Diarrhea, usually accompanied by medium to high fever, urgency, crampy abdominal pain, and sometimes nausea or vomiting. Stool may have blood, mucus, or pus. • More severe in the very young and elderly. Asymptomatic infection can occur.	
Incubation	Usually 1 to 4 days, range 12 hours to 7 days.	
Case classification	**Clinical criteria**: Variable severity illness, commonly diarrhea, cramps, nausea, and sometimes vomiting. Asymptomatic and extra-intestinal infections may occur.	
	Confirmed: culture confirmed	**Probable**: positive culture-independent diagnostic testing OR clinically compatible case with epidemiologic link to a case meeting any laboratory criteria
Differential diagnosis	Campylobacteriosis, parasitic diarrhea, salmonellosis, STEC infection, vibriosis, viral gastroenteritis, yersiniosis	
Treatment	Supportive; antibiotics can be given if the organism's susceptibility is known	
Duration	Days to weeks. Fecal shedding for weeks, sometimes longer.	
Exposure	Humans are the reservoir with person-to-person transmission within households and child care facilities, through sexual contact including oral-anal contact, by fecally contaminated inanimate objects, and through contaminated food or water.	
Laboratory testing	Local Health Jurisdiction (LHJ) and Communicable Disease Epidemiology (CDE) can arrange testing if an outbreak is suspected • Washington State Public Health Laboratories can culture and strain type (PFGE) • **Best specimens**: stool or swab in transport medium; isolate • Unless transported by 24 h keep all specimens **cold, ship cold** with Microbiology form http://www.doh.wa.gov/Portals/1/Documents/5230/302-013-Micro.pdf • Specimen Collection and Submission Instructions (stool or isolate) http://www.doh.wa.gov/Portals/1/Documents/5240/SCSI-Ent-PathScr-V1.pdf http://www.doh.wa.gov/Portals/1/Documents/5240/SCSI-Ent-ShigConf-V1.pdf	
Public health actions	LHJ can consult with CDE 877-539-4344 for testing in potential outbreak investigations. For individual confirmed cases or probable cases in risk settings: • Identify potential exposures • Identify potential outbreaks from common sources • Test symptomatic contacts in risk settings (e.g., food handling, daycare) • Educate about ways to prevent fecal-oral transmission including hand washing • Exclude from sensitive occupation or setting such as daycare attendance or work, food handling, or health care until diarrhea ends; generally require 2 negative stools (24 hours apart, at least 48 hours after antibiotics) to return to risk settings • Recommend no use of public swimming areas until 2 weeks after diarrhea ends • Persons with diarrhea should avoid close contact with immunocompromised persons • Recommend standard and contact precautions to control institutional outbreaks *Infection Control:* standard precautions with added contact precaution for diapered or incontinent persons	

Shigellosis

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To prevent further transmission from cases.
2. To identify outbreaks and potential sources of ongoing transmission.
3. To prevent further transmission from such sources.

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 Washington State Department of Health (DOH) Office of Communicable Disease Epidemiology (CDE) within 7 days of case investigation completion or summary information required within 21 days.

C. Local Health Jurisdiction Investigation Responsibilities

1. Perform case investigations for all confirmed cases, and for probable cases who work in sensitive occupations. Investigations for other probable cases depend on availability of resources.
2. Assess whether patient works in a sensitive occupation or attends childcare upon receipt of case report. Perform case investigation within one business day.
3. Administer appropriate infection control recommendations (see Section 5A).
4. Ensure that labs forward the first isolate from each patient to the Public Health Laboratories (PHL) for speciation and sub-typing.
5. Complete the shigellosis case report form and enter the data into the Public Health Issues Management System (PHIMS).

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* has been 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 crampy abdominal pain, and sometimes nausea or 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

1. Presumptive:
   - Culture-independent diagnostic testing
2. Confirmatory:
   - Isolation of *Shigella* from a clinical specimen

C. Case Definition (2017)

1. *Probable*: a case that meets the presumptive 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.
2. *Confirmed*: a case that meets the confirmatory laboratory criteria for diagnosis.

   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, which 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 unrelated 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 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 with all isolates and stool specimens: http://www.doh.wa.gov/Portals/1/Documents/5230/302-013-Micro.pdf). Also see: http://www.doh.wa.gov/Portals/1/Documents/5240/SCSI-Ent-ROShig-V1.pdf

Instructions for handling food specimens can be found in the PHL Directory of Services: http://www.doh.wa.gov/Portals/1/Documents/Pubs/301-016-PHLDirectoryServices.pdf

5. ROUTINE CASE INVESTIGATION

Case investigations should be performed for all confirmed cases, and for probable cases who work in sensitive occupations or attend child care. Investigations for other probable cases depend on availability of resources.

A. Manage the case

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. Educate 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. Children should not attend school as long as they have diarrhea.
4. 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. (see Section 6 – Managing Special Situations)

   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 246-215-02250).

   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.

B. Identify Potential Sources of Infection

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.
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 6: 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 event sponsor.
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), unless boiled or treated.
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 oral-fecal exposure.

C. Management of Contacts and Others Exposed

1. Any household member or close contact meeting the probable case definition and who works in a sensitive occupation or attends child care should be reported and investigated in the same manner as a confirmed case. Investigations for other probable cases depend on availability of resources.

   Symptomatic contacts: Symptomatic household members and other close contacts should seek medical attention from their regular providers as needed. Cultures are indicated if a symptomatic contact is a food handler, healthcare worker, child care worker, or child care attendee. (See Sections 5 A. and 6 for follow-up) Cultures are indicated if a symptomatic contact appears to be part of a common source outbreak.

   Asymptomatic contacts: Testing an asymptomatic household member or other close contacts who works as a food handler, healthcare worker, child care worker, or attends child care should be considered.
2. 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.
3. 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).
4. Call Communicable Disease Epidemiology if you suspect a common-source outbreak.

D. Environmental Evaluation/Measures

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. MANAGING SPECIAL SITUATIONS

A. 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. (WAC 170-295-3030 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.

B. 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.

7. ROUTINE PREVENTION

A. Vaccine Recommendations: None.

B. Prevention Recommendations

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

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

ACKNOWLEDGEMENTS

This document is a revision of the Washington State Guidelines for Notifiable Condition Reporting and Surveillance published in 2002 which were originally based on the Control of Communicable Diseases Manual (CCDM), 17th Edition; James Chin, Ed. APHA 2000. We would like to acknowledge the Oregon Department of Human Services for developing the format and select content of this document.

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.

January 2013: Sections 5 and 6 format was reorganized without change in content.

January 2017: Culture-independent diagnostic testing added as presumptive laboratory; front page added.