

## Shigellosis

### Summary

Shigellosis most commonly causes acute gastroenteritis. Illness is often characterized by diarrhea, fever, nausea, and sometimes vomiting and cramps; mild infections can occur. Stools often contain blood and mucus. Most infections are acquired by fecal-oral transmission from an infected person, or from fecal contamination of water or food. Laboratory diagnosis is made by culture of a fecal sample or rectal swab. Antimicrobial treatment will shorten duration of illness and reduce shedding of the organism. Symptomatic cases should be excluded from food handling, and from direct care of infants, elderly, immunocompromised and hospitalized or institutionalized patients; infected children or staff in a child care center should also be excluded. Antimicrobial treatment should be considered for these persons. A case may return to his/her usual duties when the diarrhea has ceased and they have 2 consecutive negative fecal samples or rectal swabs collected at least 24 hours apart, and at least 48 hours after completion of antibiotic therapy.

### Agent

- Shigellosis is caused by any of the four species of the *Shigella* bacillus: Group A, *S. dysenteriae*; Group B, *S. flexneri*; Group C, *S. boydii*; or Group D, *S. sonnei*. In the United States, Group D (*S. sonnei*) accounts for over two-thirds of cases; Group B (*S. flexneri*) accounts for most of the remainder.

### Transmission

- Reservoir: The only significant reservoir is humans, although other primates may be infected.
- Mode of transmission: By direct or indirect fecal-oral transmission from an infected patient or carrier. Modes of transmission are: person-to-person contact, contact with a contaminated inanimate object, ingestion of contaminated food or water, and sexual contact. Foodborne or waterborne epidemics have occurred from direct fecal contamination of communal sources. Houseflies can transfer organisms from infected feces to uncovered food items. The infective dose of *Shigella* is small (10 to 200 organisms).
- Period of communicability: *Shigella* bacilli are shed during the acute phase of the illness and usually ceases within 4 weeks of onset of illness. Asymptomatic carriers may shed the organism for months, although chronic carriage (> 1 year) is rare. Secondary attack rates in households are high, up to 40%. Outbreaks commonly occur under conditions of crowding and poor sanitation, such as in correctional facilities, institutions for children, day care centers, mental hospitals, crowded camps, and aboard ships.

## **Clinical Disease**

- **Incubation period:** Usually 2 to 4 days, with a range of 1 to 7 days.
- **Illness:** Shigellosis is an acute bacterial disease involving the large and small intestine. Illness is characterized by diarrhea, sometimes accompanied by fever, malaise, nausea, vomiting and cramps. Typically the stools contain blood and mucus, although mild infections consisting only of watery diarrhea may also occur. Seizures can be a complication, particularly in children. Although illness is usually self-limited, lasting an average of 4-7 days, severe infections may occur in young children, the elderly, and in hosts with a poor nutritional status. Rare complications include bacteremia, Reiter's Syndrome (with *s.flexneri*), toxic megacolon and hemolytic-uremic syndrome (with *s.dysenteriae*).

## **Laboratory Diagnosis**

- Diagnosis of shigellosis is established via a stool culture using fresh feces or a rectal swab, preferably collected within four days of symptom onset.
- A stool smear stained with methylene blue often demonstrates numerous polymorphonuclear leukocytes, indicative of colitis but not specific to *Shigella* diagnosis.
- Subtyping of *S. sonnei* by pulsed field gel electrophoresis (PFGE), when performed, can improve outbreak detection and control.
- An enzyme immunoassay (EIA) for shigatoxin can be useful for rapid detection of *S. dysenteriae*, type 1, often associated with more serious disease and complications.

## **Treatment**

- Antimicrobial therapy is effective for shortening the duration of diarrhea and eradicating organisms from feces. Treatment should be used in patients with severe symptoms (such as dysentery). For patients with mild illness, treatment may be indicated to prevent the spread of the organism (such as in a child care setting or for food handlers). Multidrug resistance is common among *Shigella*; therefore, antimicrobial susceptibility testing should be performed. Antimicrobial therapy should be administered for 5 days. Anti-motility or antidiarrheal medications are contraindicated for children and their use discouraged in adults. Treatment decisions should be made in conjunction with the patient's health care provider.

## **Surveillance**

- **Case Definition:**  
*Clinical description:* An illness of variable severity characterized by diarrhea, fever, nausea, cramps, and tenesmus. Asymptomatic infections may occur.  
*Laboratory Criteria* - Isolation of *Shigella* from a clinical specimen.

*Confirmed* – A case that meets the laboratory criteria for diagnosis. When available, O antigen serotype characterization should be reported.

*Probable* – A clinically compatible case that is epidemiologically linked to a confirmed case.

- **Reporting:** Report all suspected or confirmed cases of *Shigella* to the **Epidemiology and Response Division (ERD) at 505-827-0006**. Information needed includes: patient's name, age, sex, race, ethnicity, home address, home phone number, occupation and health care provider.
- **Case Investigation:** Use the Foodborne Surveillance Investigation Form to complete your investigation. Information should also be entered into NM-EDSS per established procedures.

## **Control Measures**

### 1. **Case management**

1.1. Isolation: Exclude symptomatic persons from food handling, and from direct care of infants, elderly, immunocompromised, and hospitalized or institutionalized patients. Antimicrobial treatment should be considered for these persons. They may be allowed to resume usual duties when:

- Diarrhea has resolved; AND
- There are 2 consecutive negative fecal samples or rectal swabs, collected at least 24 hours apart, and at least 48 hours after completion of antibiotic therapy.
  - 1.1.a For hospitalized patients, contact, in addition to standard, precautions should be used.

1.2. Prophylaxis: Not applicable.

### 2. **Contact management**

2.1. Isolation: Ill contacts of shigellosis patients should also be excluded from food handling, and from direct care of infants, elderly, immunocompromised, hospitalized and/or institutionalized patients. Contact should not resume until diarrhea ceases and 2 consecutive fecal samples or rectal swabs, collected at least 24 hours apart and at least 48 hours after completion of antibiotic therapy, are negative.

2.2. Prophylaxis: Not applicable.

### 3. **Prevention**

3.1. Emphasize good hand hygiene practices (i.e., proper handwashing after using the toilet, changing diapers, and before and after handling food or beverages).

3.2. Follow general guidelines for preventing foodborne illness including:

- Thoroughly cook raw food from animal sources.
- Wash raw vegetables.
- Avoid unpasteurized dairy products.
- Wash hands, knives and cutting boards after handling uncooked foods.

3.3. Immunization: Not applicable.

3.4. Symptomatic cases should consider avoiding recreational water usage until 2 weeks after resolution of diarrheal illness to decrease waterborne transmission of *Shigella*.

## **Managing Shigellosis in Child Care Centers**

1. Outbreaks of shigellosis in child care centers do occur and can be difficult to control, particularly among groups of young children who are not yet toilet trained.
2. Management of isolated cases
  - 2.1. When a case of shigellosis occurs among a child care center attendee or staff member, stool specimens from other symptomatic attendees and staff members should be cultured. Stool specimens from household contacts who have diarrhea should also be cultured.
    - All symptomatic persons who have *Shigella* isolated from their stool should be given antimicrobial therapy to prevent further transmission. They also should be excluded until the diarrhea has resolved, and there are 2 consecutive negative fecal samples or rectal swabs taken at least 24 hours apart, and at least 48 hours after completion of antibiotic therapy.
  - 2.2. Per child care licensing regulations, a center should notify parents or guardians in writing of a case of *Shigella* in the facility (Subsection D of 8.16.2.20 NMAC). See Appendix 8 for a template of a notification letter.
    - 2.1. The child care center should review its infection control protocols with staff, and emphasize the following:
      - Standard and enteric precautions should be followed to include strict handwashing routines for staff and children, and routines for handling fecal-contaminated materials. Wash with soap and water; however, waterless hand sanitizers are acceptable if hands are not visibly soiled.
      - Frequently mouthed objects should be cleaned and sanitized daily. Items should be washed with dishwashing detergent and water, then rinsed in freshly prepared (daily) household bleach solution (dilute 1 cup bleach in 9 cups of water).
      - Food-handling and diaper changing areas should be physically separated and cleaned daily.
      - Diaper changing surfaces should be nonporous and cleaned with a freshly prepared (daily) household bleach solution (dilute 1 cup bleach in 9 cups of water). Cleaning of diaper changing surfaces after each use is required; soiled diapers should be disposed of properly. If available, gloves should be worn when changing diapers.
      - Access to shared water play areas should be temporarily suspended.
      - Animals in the child care center with diarrhea should be isolated from children and taken to a veterinarian for diagnosis and treatment.
3. Outbreak
  - 1.1. If an outbreak of shigellosis (i.e., 2 or more cases) is suspected in a child care facility, the Epidemiology and Response Division should be notified immediately. Outbreaks of shigellosis in this situation would ordinarily be controlled by exclusion and treatment of symptomatic children and staff.

## **Managing Institutional Outbreaks of Shigellosis**

1. Outbreaks in residential institutions with housed adults who are unable to care for

themselves (e.g., mentally disabled or skilled nursing facility residents) can be difficult to control. Recommended control measures are:

- 1.1. Use a cohort system (i.e., housing symptomatic residents in same rooms).
- 1.2. Emphasize and supervise consistent hand hygiene for residents and staff.
- 1.3. Screen staff and other residents for symptoms and follow contact management measures as stated above.
- 1.4. Use appropriate antimicrobial therapy until stool cultures are negative for shigella. Prophylaxis of asymptomatic contacts is not recommended.
- 1.5. Keep new admissions separate from symptomatic residents.

If an outbreak of shigellosis (i.e., 2 or more cases) is suspected in a residential facility, the Epidemiology and Response Division should be notified immediately at 505-827-0006. Epidemiology and Response Division can assist in coordination of all control measures.

## **References**

1. Pickering LK, ed. Red Book: 2006 Report of the Committee on Infectious Diseases. 27<sup>th</sup> ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006: [589-591].

2. Heymann, DL, ed. Control of Communicable Disease Manual, 18<sup>th</sup> ed. Washington: American Public Health Association, 2004: [487-491].

CDC Links: <http://www.cdc.gov/ncidod/ncid.htm> (browse in the infectious disease index -> "shigella")

# SHIGELLOSIS

## **What is shigella?**

When your doctor says that you have 'shigella', the doctor means that you have an intestinal or stomach infection with bacteria called *Shigella*.

## **What are the symptoms of shigella infection?**

The most common symptoms of *Shigella* infection are diarrhea, abdominal pain, fever, severe cramping and vomiting. The stool (feces) may also contain blood and/or mucus. Most people with Shigellosis feel better after a week of illness. The symptoms usually appear within 1 to 3 days after exposure. Some infected persons do not have any symptoms.

## **How is shigella spread?**

*Shigella* is present in stools of infected persons while they are sick and for up to 4 weeks afterwards. An infected person may "dirty" or contaminate food or water. For example, infected persons can spread *Shigella* by not washing their hands after going to the bathroom and then handling food that other people will eat. Another way to get shigellosis is by direct oral contact with feces from an infected person. This could unintentionally happen while diapering children. *Shigella* infections can also be acquired by drinking or swimming in contaminated water. Water may become contaminated if sewage runs into it, or if someone with *Shigella* infection swims in it

## **How long are people contagious?**

People infected with shigellosis can spread the bacteria from the moment they begin feeling ill and for up to 4 weeks afterwards.

## **Who gets shigellosis?**

Anyone can become infected with these bacteria. Because there are many different strains of *Shigella*, shigellosis can re-occur throughout a person's lifetime.

## **What treatment is available for people with shigellosis?**

Most *Shigella* infections will go away without treatment. However, there are some instances where your health care provider may recommend treatment with antibiotics to make you feel better sooner and shorten the time *Shigella* are present in your stool.

## **Do infected people need to be kept home from school, work or daycare?**

Since the bacteria is found in stool, children should not go to daycare or school while they have diarrhea and food handlers should be excluded from work. Daycare attendees and food handlers may return to daycare/work after two negative stool culture results.

## **How can I protect myself and my family from getting shigella?**

You can decrease your chance of coming in contact with *Shigella* by the following practices:

- Wash hands frequently with water and soap, and especially after using the toilet, changing a diaper or before preparing and/or eating food. (Sanitizing gel may be substituted when hands are not visibly soiled.)

- Promptly disinfect contaminated surfaces with household chlorine bleach-based cleaners.
- Wash soiled clothing and linens.
- Avoid food or water from sources that may be contaminated



Epidemiology and Response Division  
505-827-0006

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## DISENTERÍA (SHIGELOSIS)

### **¿Qué es la shigella?**

Si su doctor le dice que tiene “shigella” o disentería, lo que quiere decir es que usted tiene una infección en su estómago o intestinos causada por una bacteria que se llama “shigella”.

### **¿Cuáles son los síntomas de la disentería?**

Los síntomas más comunes de la disentería son diarrea, dolor abdominal, fiebre, fuertes retorcijones y vómito. Puede haber sangre o moco en la diarrea (heces). La mayoría de personas con disentería mejoran después de una semana. Los síntomas normalmente aparecen uno o dos días después de haber estado expuesto a la bacteria. Algunas personas aunque están infectadas no tienen ningún síntoma.

### **¿Cómo se transmite la bacteria de la shigella?**

La shigella se encuentra en las heces de las personas infectadas mientras están enfermas y continua presente durante cuatro semanas. Una persona infectada puede “ensuciar” o contaminar la comida o el agua. Por ejemplo, las personas infectadas pueden transmitir la shigella si no se lavan las manos después de usar el baño y entonces tocan los alimentos que van a comer otras personas. Otra forma de contraer disentería es porque la bacteria pasa directamente de las heces de una persona infectada a la boca. Esto puede ocurrir de forma accidental mientras se cambian los pañales de los niños. La disentería también se puede contraer cuando se bebe o se nada en agua contaminada. El agua puede estar contaminada si tiene parte de aguas negras o si alguien que tiene una infección por shigella nada en ella.

### **¿Por cuánto tiempo puede alguien con disentería contagiar a otros?**

Las personas que están infectadas con disentería pueden transmitir la bacteria desde el momento en que se empiezan a sentir enfermas y continua presente por cuatro semanas.

### **¿Quién puede contraer la disentería?**

Cualquier persona puede contraer una infección causada por esta bacteria. Hay muchos diferentes tipos de shigella, por eso la disentería puede volver a ocurrir en la vida de una persona.

### **¿Cómo se trata la disentería?**

La mayoría de las infecciones por shigella desaparecen sin usar ningún tratamiento. Sin embargo, hay algunos casos en los que su médico le puede recomendar tratamiento con antibióticos para hacerle sentir mejor y reducir el tiempo durante el cual la shigella está presente en sus heces.

### **¿Es necesario quedarse en casa y no ir a la escuela, a la guardería o al trabajo?**

La bacteria se encuentra en las heces, por esto, los niños no deben ir a la guardería o a la escuela mientras tengan diarrea y las personas que trabajan manipulando alimentos no deben ir al trabajo. Los niños pueden regresar a la guardería o la escuela y los trabajadores (que manipulan alimentos) pueden regresar a su trabajo cuando hayan tenido dos resultados negativos en sus pruebas de heces.

**¿Cómo puedo protegerme yo y también proteger a mi familia contra la disentería?**

Para reducir sus posibilidades de tener contacto con la bacteria de la shigella, haga lo siguiente:

- Lávese las manos con frecuencia con agua y jabón, sobre todo después de usar el baño, cambiar pañales y antes de preparar o comer alimentos. (En lugar de lavárselas puede usar un gel desinfectante para manos cuando no se vean sucias).
- Desinfecte pronto las superficies contaminadas con un producto limpiador para la casa antibacterial (por ejemplo que contenga cloro).
- Lave la ropa de cama y otras prendas de vestir que se hayan ensuciado.
- Evite tomar agua o alimentos que puedan provenir de fuentes contaminadas.