SHIGELLOSIS

Disease Overview

Shigellosis is caused by the bacterium *Shigella*, of which there are four serogroups. In general, *S. flexneri*, *S. boydii*, and *S. dysenteriae* account for most cases in developing countries. In developed countries, *S. sonnei* is most common and *S. dysenteriae* is the least common. Shigella is primarily a disease of children and is a significant factor in child mortality in developing countries. Outbreaks can occur in crowded conditions where personal hygiene is poor.

Symptoms

Infection is acute and is characterized by loose stools of small volume, accompanied by fever, nausea and sometimes toxemia, vomiting, and cramps. In typical cases the stool contains blood and mucous (dysentery). Many cases present with watery diarrhea. Rarer, but severe complications also include hemolytic uremic syndrome, toxemia, and seizures in young children. Severity and case fatality vary with the host and serotype. Infection caused by *S. sonnei* usually has a short clinical course and an almost negligible case-fatality rate except in immunocompromised hosts. *S. dysenteria* is often associated with serious disease and complications.

Reservoir

Humans are the only significant reservoir of infection.

Mode of Transmission

Fecal-oral transmission. Common source outbreaks are relatively uncommon but have been traced to contaminated food, usually by infected food handlers, or contaminated drinking or recreational water. Raw oysters and other shellfish have been a source of infection. Flies can also act as vectors for food contamination, transmitting bacteria from waste products to uncovered food items.

Asymptomatic carriers may transmit infection.

Person-to-person transmission (secondary fecal-oral transmission from infected cases) occurs most often in settings where close contact is common such as families, childcare centers, custodial institutions, and among men who have sex with men.

Incubation Period

Average 1-3 days (range 12-96 hours, or up to one week).

Period of Communicability

During acute infection and until the infectious agent is no longer present in feces, usually for four weeks after illness. Rarely, the carrier state may persist for months especially if the person is not treated.

Risk Factors

Increased risk of acquiring/severe illness:

- Children - less than 5 years of age and 5-14 years of age
- The elderly, debilitated and malnourished persons of all ages, or immunocompromised persons(such as those with HIV)
- Travelers to endemic countries (*Shigella dysenteriae*, *flexneri*, *boydii*)

- Those living in crowded situations such as prisons, children's institutions, child care centres, mental health facilities, and crowded refugee camps
- Men who have sex with men

Surveillance Case Definition

Confirmed case

Laboratory confirmation of infection with or without clinical illness:

- isolation of *Shigella* spp. from an appropriate clinical specimen (e.g. stool, blood, rectal swab, deep tissue wounds, other sterile site, vomit or urine).

Probable case

Clinical illness in a person who is epidemiologically linked to a confirmed case.

OR

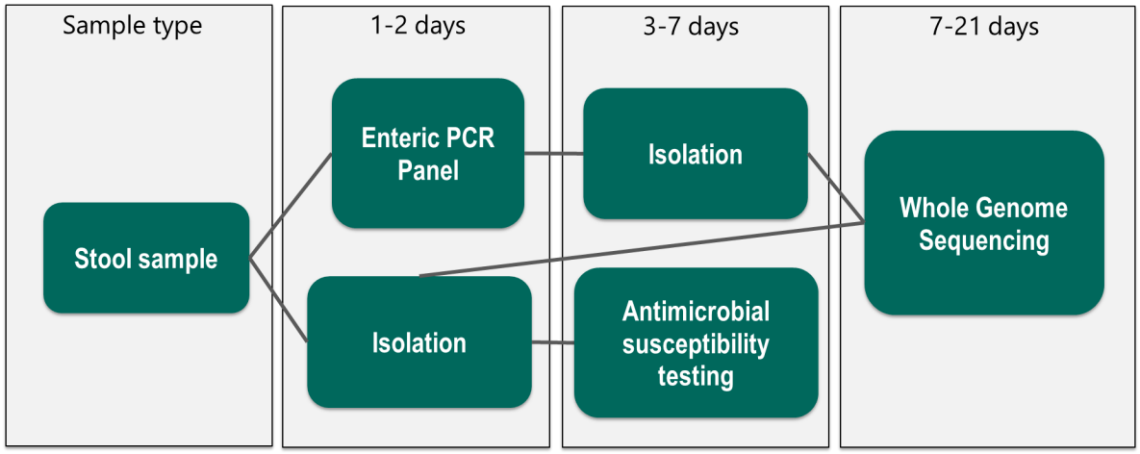
Detection of *Shigella* spp./Enteroinvasive *E. coli* (EIEC) nucleic acid with or without clinical illness, in an appropriate clinical specimen (dependent on the test used), using a nucleic acid test (NAT), such as a polymerase chain reaction (PCR).

Diagnosis and Laboratory Guidelines

Bacterial culture is routinely done for *Shigella* spp. detection. Bacterial isolates are then tested for antimicrobial susceptibilities and sent for whole genome sequencing (WGS). Enteric PCR panels will detect bacterial genetic material for *Shigella* spp. directly from the sample. Laboratories will report a positive PCR panel result regardless of the result of the bacterial culture. Typically, a bacterial culture will follow a PCR positive result to allow further characterization.

Whole genome sequencing is performed on all positive *Shigella* spp. to facilitate long-term trend surveillance. It is also required for cluster detection and outbreak investigation.

Figure: Testing pathways and timelines



Reporting

Per Policy 2.2 Disease and Event Notification to OCMOH and section 3 Disease and Event Reporting.

- Routine surveillance (RDSS) for all confirmed cases.
- Access databases for all confirmed cases and for probable cases that are NAT or PCR positive. Database extracts are submitted to OCMOHE on a weekly basis.

Case Management

Education

Case or relevant caregiver should be informed about:

- Nature of infection, length of communicable period and mode of transmission
- Enteric disease precautions
- Hand washing
- Environmental management
- Food safety
- Safe water source
- Safe sex practices (if applicable)

Investigation

The severity of disease (*Shigella dysenteriae*, *flexneri*, *boydii*), particularly in children, and the ability to spread person to person and via contaminated food, water, and environmental surfaces (*Shigella sonnei)* means single cases **require immediate investigation**.

Use enteric investigation form (*Shigella dysenteriae*, *flexneri*, *boydii)* and obtain travel history or contact with another case that was ill abroad or on return. If no link, obtain detailed history before onset including food, water, daycares, and other institutions.

Use enteric investigation form (*Shigella sonnei*) and obtain detailed history before onset including food, water, swimming, daycares and other institutions, and travel. Potential sources of infection should receive follow up appropriate to risk.

Exclusion/Social Distancing

Follow exclusion period guidelines for cases under investigation (cases, symptomatic and asymptomatic contacts) identified in high-risk individuals (food handlers, caregivers, and individuals in daycare centres and kindergartens).

Treatment

Adequate fluid replacement. Referral to health care professional if complications occur.

Immunization

Not applicable

Contact Management

Education

Per case management

Investigation

Identify contacts with significant exposure to cases (household, sexual and other close personal contact). Complete enteric investigation form per case management. Symptomatic contacts should be managed as cases. Screening stool specimens of asymptomatic contacts for *Shigella* is necessary for contacts only if spread of disease is likely (e.g. food handlers and care givers).

Exclusion/Social Distancing

Follow exclusion period guidelines for cases under investigation (cases, symptomatic and asymptomatic contacts) identified in high-risk individuals (food handlers, caregivers, and individuals in daycare centres and kindergartens).

Prophylaxis

Not applicable

Outbreak Management

Activate the local outbreak plan when an outbreak is declared.

Outbreaks occur mostly in daycares and schools. Adequate personal hygiene and toilet facilities are important in the control of outbreaks in institutions. Hand washing by children should be supervised. Frequent cleaning and adequate disinfection is required.