

Shigella spp.

Background

Family Enterobacteriaceae, non-encapsulated, non-sporogenous, non-motile; serological identification of somatic antigens. *Shigella* has four serogroups historically treated as species; *Shigella*: *S. boydii*, *S. dysenteriae*, *S. flexneri*, and *S. sonnei*. *Shigella sonnei*, also known as Group D *Shigella*, accounts for over two-thirds of the shigellosis in the United States. *Shigella flexneri*, or Group B *Shigella*, accounts for almost all of the rest.

Agent Criteria

Infectious Dose: 10-200 organisms by ingestion

Stability: Susceptible to many disinfectants - 1% sodium hypochlorite, 70% ethanol, 2% glutaraldehyde, iodines, phenolics, formaldehyde. Sensitive to moist heat (121° C for at least 15 min) and dry heat (160-170° C for at least 1 hour). Survives in feces up to 11 days; flies - up to 12 days; water - 2 to 3 days; shirts of patients - 8 days.

Gram +/-: Gram Negative

Incubation Period: One to 7 days, usually 1-3 days

Mortality Rate: *S. dysenteriae* infections have up to 20% case fatality rate in hospitalized patients, *S. sonnei* infections have negligible fatality rate

Morbidity Rate:

Duration of Illness: 5-7 days

Severity of Illness: Acute disease of large and small intestine; diarrhea, fever, nausea, and sometimes toxemia, vomiting, cramps and tenesmus; stools contain blood, mucus and pus; alterations in consciousness may occur; mild and asymptomatic infections occur; severity of illness depends on host, dose and serotype

Duration of Infection: Generally present up to 4 weeks after illness; asymptomatic carriers may transmit infection; the carrier state may rarely persist for months or longer

Long term effects after infection: *S. flexneri* precipitate reactive arthritis (Reiter's syndrome) in some patients

Allergen (yes/no): No

Carcinogenic/mutagenic (yes/no): No

Abortogenic (yes/no): Some evidence of the toxin causing abortions in mice

Toxin Production (yes/no): *S. dysenteriae* may produce enterotoxin (Shiga toxin)

Drug Resistance: Multidrug resistant (MDR) strains are common

Infection Mitigation Measures:

For human pathogens

Immunization: No

Prophylaxis: Not generally recommended

Post Infection Treatment: Sensitive to one or more of TMP-SMX, ampicillin, chloramphenicol, ciprofloxacin, ofloxacin; Fluid and electrolyte replacement.

Existence of Diagnostic tests: Yes

Routes of Infection:

Inhalation: No evidence of aerosol transmission

Ingestion: Yes

Percutaneous: Yes

Contact: Yes

Vector-Borne: Cockroach, and fly-borne transmission may occur as the result of direct fecal contamination

Natural Routes of Infection:

Inhalation: No evidence of aerosol transmission

Ingestion: Direct or indirect fecal-oral transmission from a patient or carrier; poor hygiene practices spread infection to others by direct physical contact or indirectly by contaminating food; water, milk

Percutaneous: Yes

Contact: Yes

Vector-Borne: Cockroach, and fly-borne transmission may occur as the result of direct fecal contamination

Sexual Transmission: Yes

Vertical Transmission: No evidence

Communicability:

Human to Human: Communicable during acute infection and until agent is no longer present in feces

Human to Animal: Yes

Animal to Animal: Yes

Animal to Human: Yes

Multiple Species: Humans, primates

Where is it present: Worldwide; 2/3 of cases and most deaths are children under 10 years; common during weaning period; 10-40% secondary attack rates in households; outbreaks under conditions of crowding and poor sanitation

Where is it endemic: Endemic in tropical and temperate climates