SHIGELLOSIS: Notes about the Disease

Historically, the enteric bacterial disease shigellosis ("bacillary dysentery") has figured large in situations where personal hygiene is either ignored or difficult to maintain. Unlike salmonellosis, it is exclusively a primate organism, with non-human primates only rarely involved. It is usually transmitted directly person-to-person. *Shigella* organisms have an ID_{50} of only 10-100 organisms, making it quite an effective fecal-oral agent. This is particularly true in settings where young children—the age group with the highest incidence of shigellosis—congregate (e.g., day care centers).[1] Food and waterborne outbreaks do occur from time to time, but there is usually evidence of human fecal contamination in the chain of transmission.[2]

While there are four distinct *Shigella* species (serogroups), *S. sonnei* and *S. flexneri*, respectively, account for most infections in the United States. The other two species, *S. boydii* and *S. dysenteriae* (the "Shiga bacillus"), are uncommon here. This is fortunate for us, because *S. dysenteriae* is much more pathogenic and has a greater potential for epidemics that the other three species. While most cases of shigellosis caused by the more common *Shigella* strains found in NC are self-limited and probably don't require antibiotic treatment, such treatment may be indicated in more severe cases and, in carefully evaluated situations, as a method of limiting spread in outbreaks.

Antibiotic resistance of *Shigella* isolates has become a serious problem in North Carolina and elsewhere. This was dramatically demonstrated by the nationwide dissemination of a multiply-resistant *S. sonnei* strain that originated at a 1987 Rainbow Family gathering in the Nantahala National Forest in western NC.[3] Shigellosis control in settings such as mass gatherings, custodial institutions, and, more commonly, day care centers is difficult enough without having to deal with antibiotic-resistant strains. Public health workers responsible for controlling such outbreaks face difficult issues such as coordinating the clinical management of infected individuals with the medical community and working effectively with day care center management to keep the child care facility open. Public health workers implement control measures focusing on supervised hand hygiene among staff and children, environmental sanitation, separating (cohorting) the infected attendees from the non-infected, and ensuring that infected children are not taken to other centers where they might initiate additional outbreaks.

Despite the effectiveness of antibiotics in shortening the duration of illness and terminating the carriage of *Shigella* organisms, the mainstay of shigellosis control and prevention remains personal hygiene and sanitation.

1. SH Gehlbach, et al., "Spread of Disease by Fecal-Oral Route in Day Nurseries: A Modern Health Hazard," *Health Services Rep* 88 (1973): 320-2.

2. BD Gessner and M. Beller, "Moose Soup Shigellosis in Alaska," *Western Med J* 160 (1994): 430-3, www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1022485 .

3. M. Wharton, et al., "A Large Outbreak of Antibiotic-Resistant Shigellosis at a Mass Gathering," *J Infect Dis* 162 (1990):1324-8, www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=2230262 .