

National Enteric Disease Surveillance: *Shigella* Annual Summary, 2008

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An overview of national *Shigella* surveillance is available online at <http://www.cdc.gov/ncezid/dfwed/PDFs/Shigella-Overview-508.pdf> (1).

National Shigella Surveillance Data

Laboratory-based Enteric Diseases Surveillance (LEDS) data

LEDS *Shigella* Data Tables for 2008 are available online at <http://www.cdc.gov/ncezid/dfwed/edeb/reports.html#Shigella>.

- The frequency and percentage of laboratory-confirmed *Shigella* species isolated from human sources reported to CDC in 2008 are shown by species in Table 1 and by serotype in Table 2.
 - During 2008, 14,805 isolates were reported to CDC through LEDS.
 - Of the 14,805 isolates, 12,490 (84.4%) were identified to species.
 - Distribution by species was similar to previous years, with *Shigella sonnei* accounting for the largest number of isolates (76.1%), followed by *Shigella flexneri* (7.5%), *Shigella boydii* (0.2%), and *Shigella dysenteriae* (0.6%).
- The distribution of isolates by species, age group, and sex during 2008 is shown in Table 3.
 - In 2008, *Shigella* was isolated most frequently from children from 1 to 9 years of age (60% of all isolates).
 - Overall, the distribution of isolates by gender varied, with a greater number of isolates from male than female infants and young children (ages <1 to 4 years), and a greater number of isolates from females in all age groups over 4 years old.
 - By species, for all age groups over 4 years old, most *Shigella sonnei* isolates came from females; by contrast, for all age groups over 19 years old (except 80+), most *Shigella flexneri* isolates came from males.
- The number of isolates by species from 1998 to 2008 is shown in Table 4.
 - *Shigella sonnei* isolates constituted the majority of reported isolates, ranging from a low of 66.6% of all isolates in 2003 to a high of 80% in 2000.
 - The number of isolates reported with an unknown species varied over time, ranging from a low of 4.7% in 2000 to a high of 21.3% in 2003. From 2004 to 2008, the average percentage of isolates each year with unknown species was 12.4%.
- The median age, in years, of persons with laboratory-confirmed *Shigella* isolates from 1998 to 2008 is shown in Table 5.
 - From 1998 to 2008, the median age of persons with *Shigella sonnei* infections has ranged from 6 to 8 years of age; the median age of persons with *Shigella flexneri* infections has ranged from 10 to 23 years of age.

- The number of isolates by species, serotype, and year from 1998 to 2008 is shown in Table 6.
 - The most frequently reported serotypes of *Shigella flexneri* from 1998 to 2008 (excluding *flexneri* of unspecified serotype, n=13814) were 2a (1210/3842, 31%), 6 (619/3842, 16%), and 3a (484/3842, 13%).
- The number of isolates by species, serotype, and month in 2008 and from 1998 to 2008 is shown in Tables 7 and 8.
 - In 2008, isolations of *Shigella sonnei* peaked in May, followed by a second peak in late summer and fall.
 - From 1998 to 2008, isolation of *Shigella sonnei* increased in late summer and fall, reaching a peak in October, then declined to a trough in February.
 - From 1998 to 2008, isolations of *Shigella flexneri* peaked in August.
- The number of isolates by species and geographic region from 1998 to 2008 is shown in Table 9 and the number of *Shigella sonnei* isolates by geographic region from 1998 to 2008 is shown in Figure 1.
 - There were no marked differences in geographic distribution of all *Shigella* species or of *Shigella sonnei* from 1998 to 2008
- The number of isolates by species and state from 1998 to 2008 is shown in Table 10.

NNDSS Data

The National Notifiable Disease Surveillance System (NNDSS) collects and compiles reports of nationally notifiable infectious diseases, including shigellosis. This system includes reports of laboratory-confirmed cases and probable cases (clinically compatible cases with an epidemiological link to a confirmed case). The 2008 NNDSS report is available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5754a1.htm>

- A total of 22,625 cases of shigellosis were reported to NNDSS during 2008 (2).

Antimicrobial Resistance Data

The National Antimicrobial Resistance Monitoring System (NARMS) monitors antimicrobial resistance among enteric bacteria (including *Shigella*) from humans. The most recently published NARMS annual report is from 2010, available at <http://www.cdc.gov/narms/pdf/2010-annual-report-narms.pdf>. The 2008 data, as reported in the 2010 report showed the following:

In *Enterobacteriaceae*, resistance to nalidixic acid, an elementary quinolone, correlates with decreased susceptibility to ciprofloxacin (MIC ≥ 0.12 $\mu\text{g/mL}$) and possible fluoroquinolone treatment failure. Ceftiofur is a third-generation cephalosporin used in food animals in the United States; resistance to ceftiofur among *Enterobacteriaceae* correlates with decreased susceptibility to ceftriaxone (MIC ≥ 2 $\mu\text{g/mL}$).

- 1.6% of *Shigella* isolates were resistant to nalidixic acid and 0.7% were resistant to ciprofloxacin.

Multidrug resistance is described in NARMS as resistance to three or more classes of antimicrobial agents, as defined by the Clinical and Laboratory Standards Institute (CLSI).

- 35.2% of *Shigella* isolates were resistant to at least three of the eight antimicrobial classes tested.
- 16.0% of *Shigella* isolates were resistant to ampicillin and trimethoprim-sulfamethoxazole

Outbreak Data

The Foodborne Disease Outbreak Surveillance System (FDOSS) collects reports of foodborne disease outbreaks from local, state, tribal, and territorial public health agencies. The 2008 annual summary of foodborne disease outbreaks is available at

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6035a3.htm> (3).

- In 2008, 1,034 foodborne disease outbreaks were reported; 6 confirmed, single-etiology outbreaks of *Shigella* infections with 170 illnesses were reported
 - The most common serotype causing confirmed, single-etiology outbreaks of *Shigella* infections was *Shigella sonnei* (six outbreaks).

The Waterborne Disease and Outbreak Surveillance System (WBD OSS) collects reports of waterborne disease outbreaks associated with drinking water and recreational water from local, state, tribal, and territorial public health agencies. The 2008 annual summary of waterborne disease outbreaks associated with drinking water and recreational water is available at

<http://www.cdc.gov/mmwr/pdf/ss/ss6012.pdf> (4,5).

- In 2008, 16 waterborne disease outbreaks associated with drinking water were reported; one was caused by multiple etiologies, including *Shigella* (4)
 - An outbreak in Illinois of *Shigella sonnei*, *Cryptosporidium*, and *Giardia* infections associated with lake water while on a boat resulted in 41 cases
- In 2008, 42 waterborne disease outbreaks associated with treated recreational water were reported; one was caused by *Shigella* (5)
 - An outbreak in Maryland of *Shigella sonnei* infections associated with a temporary waterslide and a dunk tank at a farm resulted in 12 cases.
- In 2008, 8 waterborne disease outbreaks associated with untreated recreational water were reported; one was caused by *Shigella* and one was caused by multiple etiologies, including *Shigella* (5)
 - An outbreak in Florida of *Shigella* infections associated with a spring at a county park resulted in 2 cases.
 - An outbreak of *Shigella sonnei*, norovirus genogroup I and *Yersinia enterocolitica* infections in Ohio associated with a lake or reservoir at a waterpark resulted in 54 cases.

References

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