

# National Enteric Disease Surveillance: *Shigella* Annual Report, 2011

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

## Human Surveillance Data: Laboratory-based Enteric Disease Surveillance (LEDS)

The Laboratory-based Enteric Disease Surveillance (LEDS) system collects reports of isolates from laboratory-confirmed human *Shigella* infections from state public health laboratories. Reporting to LEDS is voluntary, and the number of states submitting isolates varies somewhat from year to year, although almost all states report every year. Occasionally, more than one isolate is reported from a single episode of infection in a person; this report includes only one isolate of a given *Shigella* species per person within a 30-day period.

In this report, we summarize the number of infections reported and also report incidence rates (cases per 100,000 population), which are calculated as the number of *Shigella* infections in humans reported for a given year, divided by the state population for that year. Data were received from 51 of 51 reporting jurisdictions (50 states plus the District of Columbia) in 2011.

*Data in this report current as of 1/14/2013.*



Photograph depicting the colonial morphology displayed by *Shigella boydii* bacteria cultivated on a Hektoen enteric (HE) agar surface.

**Table 1.** Laboratory-confirmed *Shigella* infections reported to CDC, by species, United States, 2011

Rank	Serotype	Number Reported	Percent
1	<i>S. sonnei</i>	5348	75.7
2	<i>S. flexneri</i>	974	13.8
3	<i>S. boydii</i>	83	1.2
4	<i>S. dysenteriae</i>	12	0.2
	<b>Sub Total</b>	<b>6417</b>	<b>90.9</b>
	Unknown	645	9.1
	<b>Sub Total</b>	<b>645</b>	<b>9.1</b>
	<b>Total</b>	<b>7062</b>	<b>100</b>

State public health laboratories reported 7,062 laboratory-confirmed *Shigella* infections to CDC through LEDS

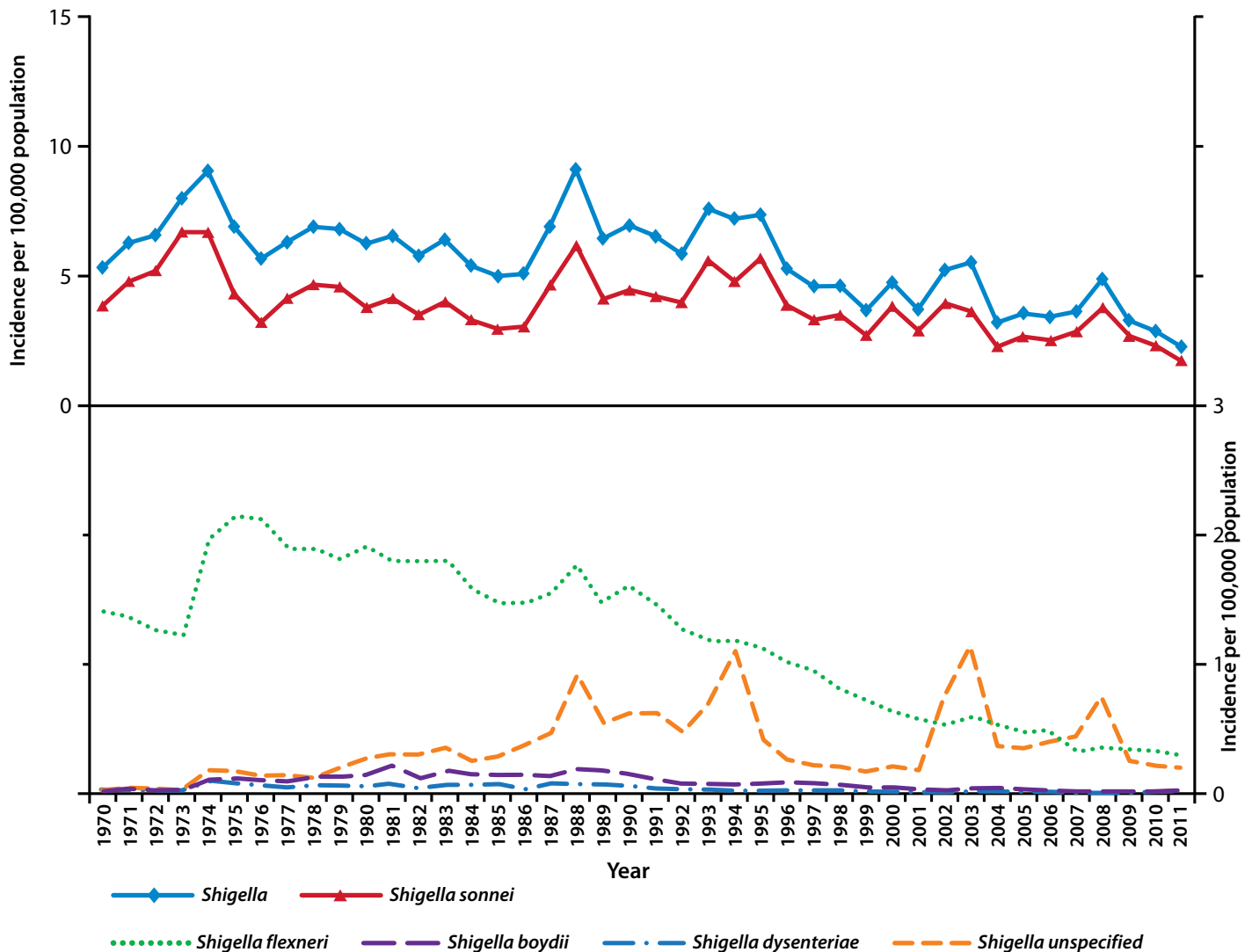
- Of the 7,062 isolates, 6,417 (91%) were identified to species level.
- Distribution by species was similar to previous years, with *Shigella sonnei* accounting for the largest percentage of infections (75.7%), followed by *Shigella flexneri* (13.8%), *Shigella boydii* (1.2%), and *Shigella dysenteriae* (0.2%).

**Table 2.** Median age (years) of persons with laboratory-confirmed *Shigella* infections reported to CDC by species and year, United States, 2000-2010

Species	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<i>S. sonnei</i>	8	7	7	7	7	7	6	6	6	6	6
<i>S. flexneri</i>	15	21	23	20	20	18	15	17	22	25	26
<i>S. boydii</i>	25	21	17	21	25	10	26	16	17	22	24
<i>S. dysenteriae</i>	28	29	22	9	25	20	8	15	31	28	26
Unknown	23	6	6	7	8	8	9	7	22	8	9

In 2011, the median age of persons with *S. sonnei* was 6 years. The median age has decreased since 2001. In contrast, the median age of persons with *S. flexneri* was 26 years, the highest since 2001.

**Figure 1.** Incidence rate of laboratory-confirmed *Shigella* infection reported to CDC (all species), United States, 1970-2011



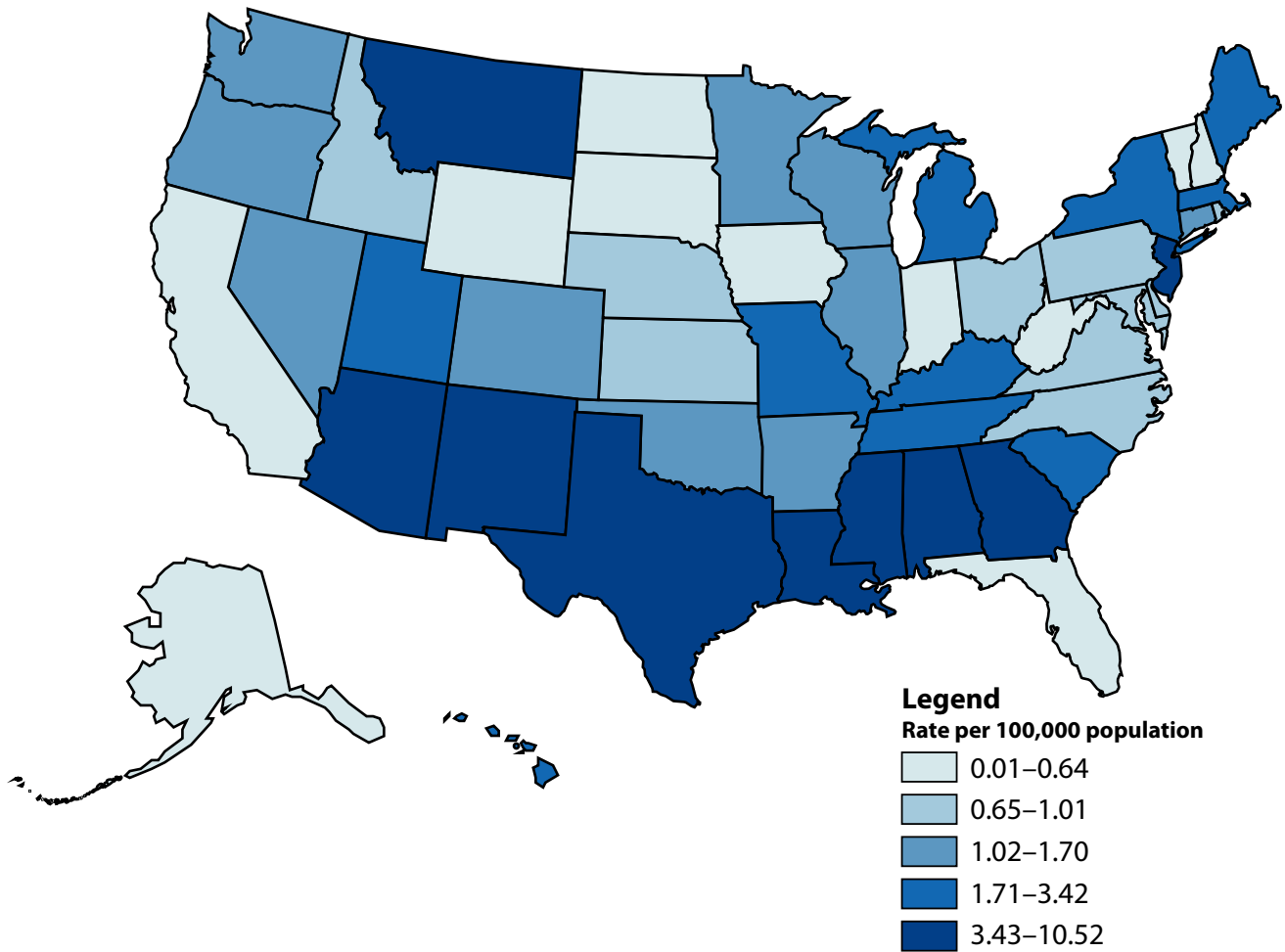
The top panel of this graph shows the incidence rates of infection with *Shigella* (all species) and *Shigella sonnei* from 1970 to 2011.

- Since 1970, the incidence rate of infection with *Shigella* (all species) has been driven by the incidence rate of infection with *Shigella sonnei*.

The bottom panel of this graph shows the incidence rate of infection with all *Shigella* species other than *Shigella sonnei* and includes infections with an unspecified species.

- The incidence rate of infection with *Shigella flexneri* has been decreasing since the 1980s.
- Since the mid-1980s, the incidence rate of *Shigella* infection in which the species is not identified has fluctuated, likely representing at least to some extent outbreak situations where public health laboratories did not characterize all outbreak-associated *Shigella* isolates to the species level.
- *Shigella boydii* and *Shigella dysenteriae* infections are rare in the United States.

**Figure 2a.** Incidence rate of laboratory-confirmed *Shigella* infection reported to CDC (all species) by reporting jurisdiction, United States, 2011

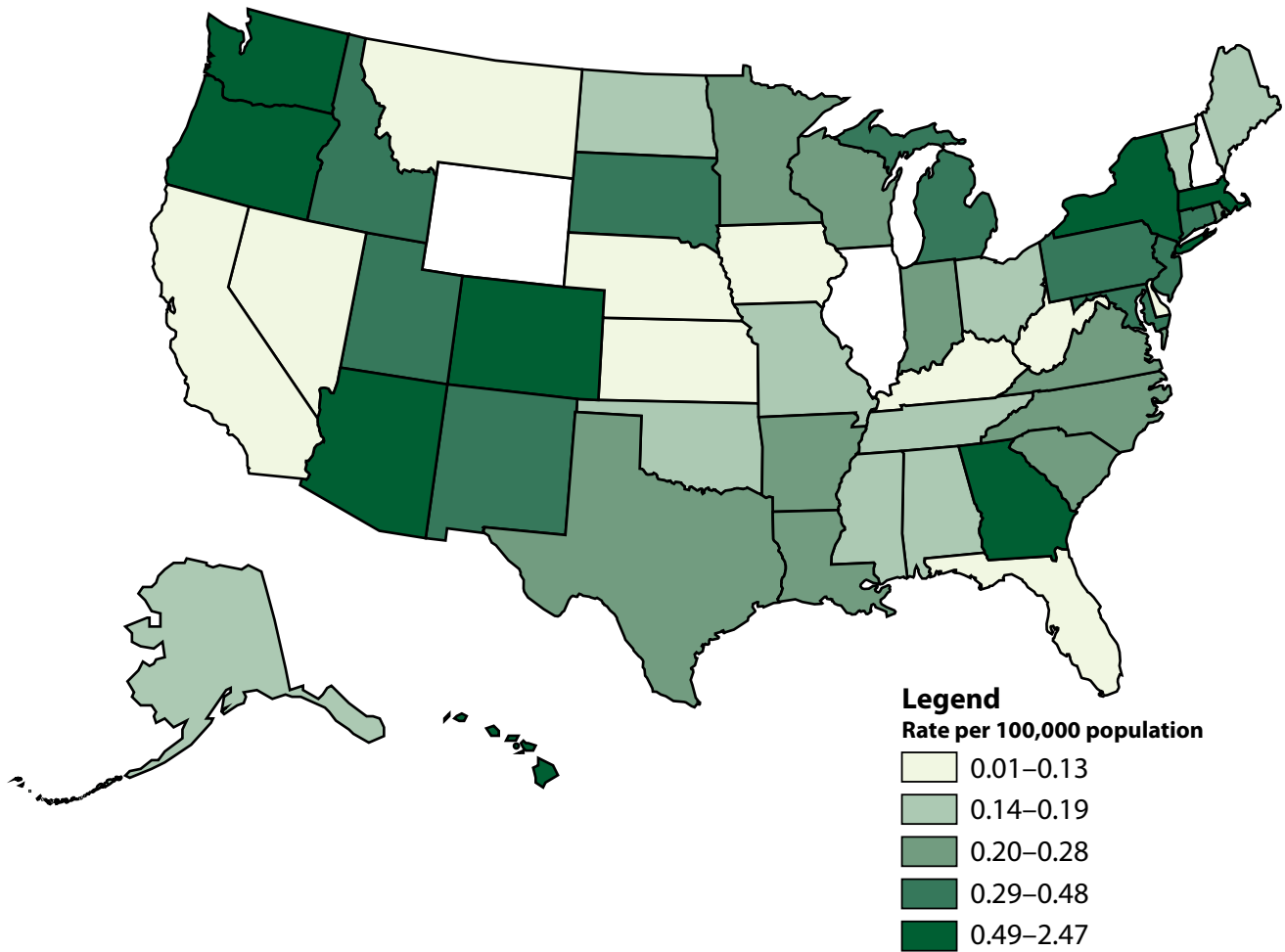


\* Unshaded reporting jurisdictions are those for which the reporting jurisdiction reported no *Shigella* isolates (i.e., no infections were diagnosed or the reporting jurisdiction did not report to CDC).

Fifty-one reporting jurisdictions reported a total of 7,062 *Shigella* infections, corresponding to an overall incidence rate (cases per 100,000 population) 2.3. The reporting jurisdictions with the highest reported incidence rates of *Shigella* infection were Montana (10.6), Texas (8.7), and Louisiana (7.1).



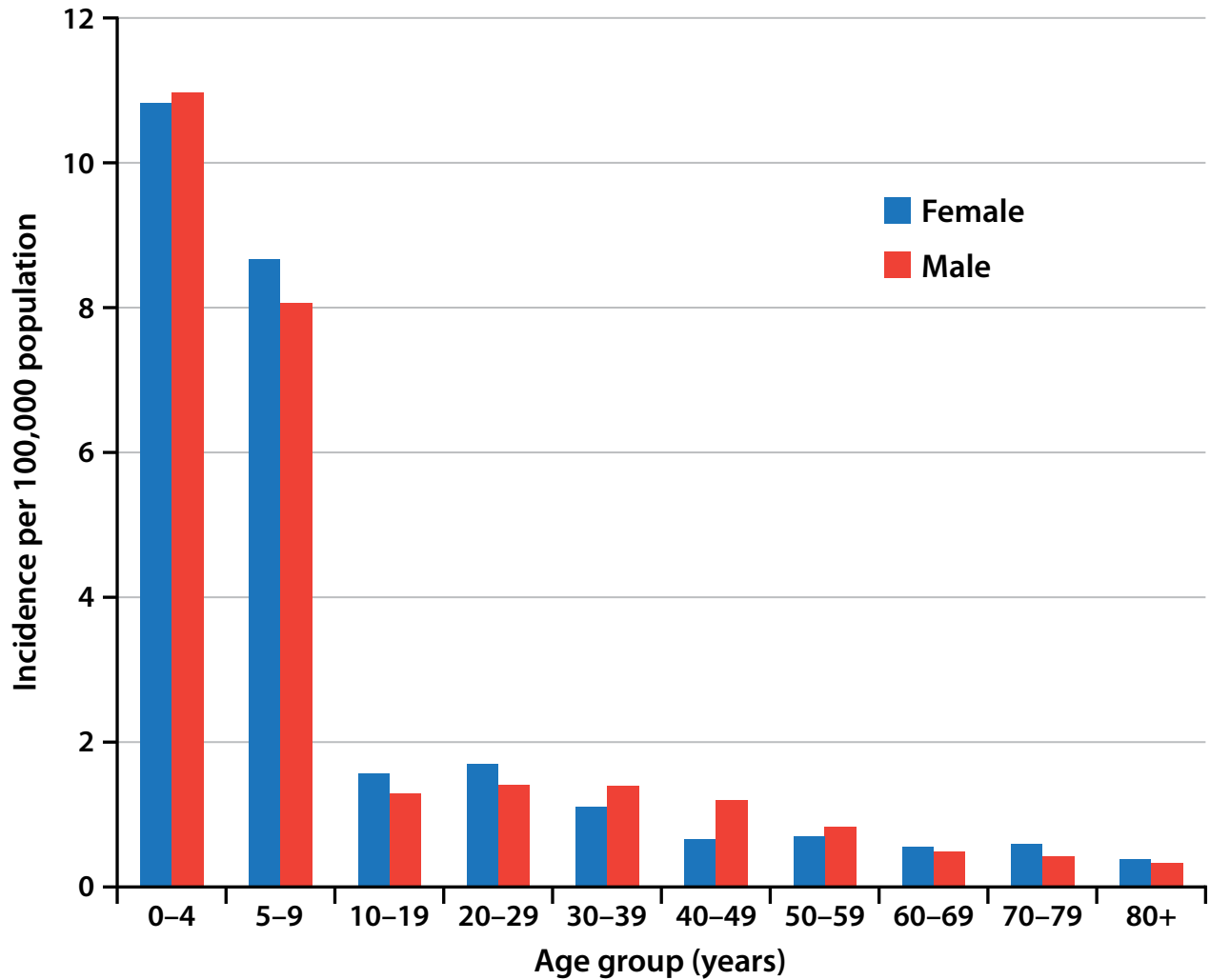
**Figure 2c.** Incidence rate of laboratory-confirmed *Shigella flexneri* infection reported to CDC, by reporting jurisdiction, United States, 2011\*



\* Unshaded reporting jurisdictions are those for which the reporting jurisdiction reported no *Shigella* isolates (i.e., no infections were diagnosed or the reporting jurisdiction did not report to CDC).

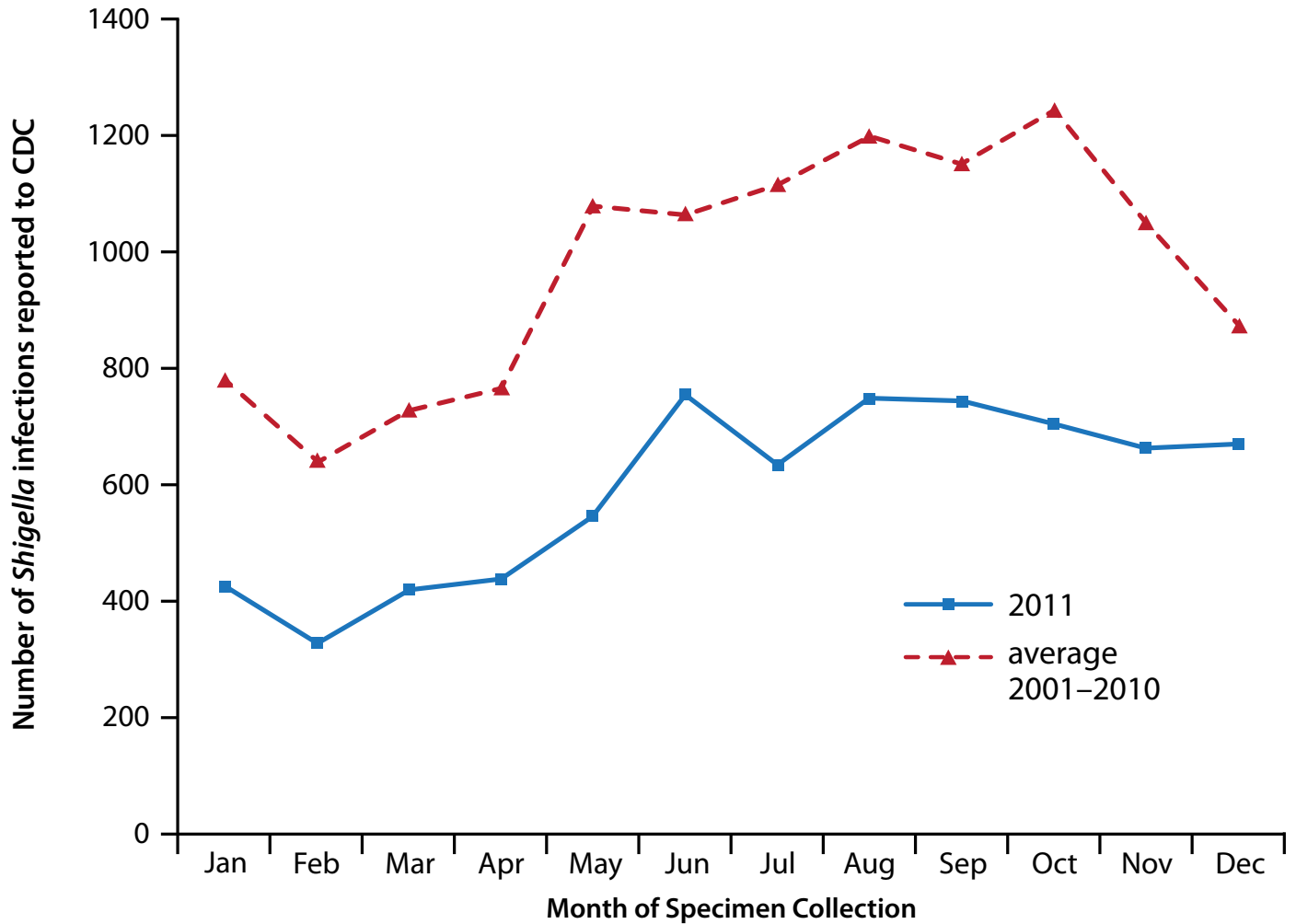
Forty-eight reporting jurisdictions reported a total of 974 *Shigella flexneri* infections, corresponding to an overall incidence rate (cases per 100,000 population) of 0.31. The reporting jurisdictions with the highest reported incidence rates of *Shigella flexneri* infection were Hawaii (2.5), the District of Columbia (2.3), and Arizona (1.9).

**Figure 3.** Incidence rate of laboratory-confirmed *Shigella* infection reported to CDC, by age group and sex, United States, 2011 (n=7,062)



During 2011, the incidence rate of *Shigella* infection was highest in children under 5 years old. From ages 0 to 29, females had a higher incidence rate of *Shigella* infection than males. From ages 30 to 49, males had a higher incidence rate of *Shigella* infection than females. For ages 50 and older, incidence rates of infection were similar among males and females.

**Figure 4.** Number of laboratory-confirmed *Shigella* isolates reported to CDC by month of specimen collection, United States, 2010 and average number during 2001 to 2010



Compared to the previous 10 years (2001–2010), fewer *Shigella* isolates were reported in 2011. During 2011, reports of *Shigella* infections showed a trough from January through April, but seasonal variation was somewhat less marked than in 2001–2010.



## Human Surveillance Data: National Notifiable Diseases Surveillance System (NNDSS)

The National Notifiable Disease Surveillance System (NNDSS) collects and compiles reports of nationally notifiable infectious diseases, including *Shigella*. This system includes reports of laboratory-confirmed cases and probable cases (clinically compatible cases with an epidemiological link to a confirmed case).

The report for 2011 was not yet available when this report was written. Reports are available at [http://www.cdc.gov/mmwr/mmwr\\_nd/index.html](http://www.cdc.gov/mmwr/mmwr_nd/index.html).

## Human Antimicrobial Resistance Data: National Antimicrobial Resistance Monitoring System (NARMS)

The National Antimicrobial Resistance Monitoring System (NARMS) monitors antimicrobial resistance among enteric bacteria (including *Shigella*) isolated from humans. The report for 2011 was not yet available when this report was written. Reports are available at <http://www.cdc.gov/narms/reports.html>.

## Human Outbreak Data: Foodborne Disease Outbreak Surveillance System (FDOSS) and Waterborne Disease Outbreak Surveillance System (WBD OSS)

The Foodborne Disease Outbreak Surveillance System (FDOSS) collects reports of foodborne disease outbreaks from local, state, and territorial public health agencies. The report for 2011 was not yet available when this report was written. Reports are available at [http://www.cdc.gov/outbreaknet/surveillance\\_data.html](http://www.cdc.gov/outbreaknet/surveillance_data.html).

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, and territorial public health agencies. The report for 2011 was not yet available when this report was written. Reports are available at <http://www.cdc.gov/healthywater/statistics/wbdoss/surveillance.html>.

## References

1. Centers for Disease Control and Prevention (CDC). National *Shigella* Surveillance Overview. Atlanta, Georgia: US Department of Health and Human Services, CDC, 2011.

### Recommended Citation:

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