

Shigellosis, Orange County

2011 – 2020



Background

Shigellosis is disease caused by a group of bacteria called *Shigella*. The four species of *Shigella* are *boydii*, *dysenteriae*, *flexneri*, and *sonnei*. While rare in Orange County, *S. dysenteriae* can cause deadly epidemics in the developing world.

Shigellosis signs and symptoms are primarily diarrhea, fever, and abdominal cramping. Symptoms generally begin one to two days after ingestion of the bacteria with an illness that lasts five to seven days which may require hospitalization if severe. The bacteria are present while an infected person has diarrhea and for a week or two after the diarrhea has stopped. Only a small number of *Shigella* bacteria are needed to cause infection, and can be easily spread through contaminated surfaces (e.g. toys and changing tables), food or beverages, recreational water, or sexual contact. <http://www.cdc.gov/shigella>.

**COMMUNICABLE
DISEASE
CONTROL**

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Orange County, California

Table 1. Orange County Shigellosis Case Counts with Gender, Race/Ethnicity and Age Group Detail, 2011 – 2020

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Cases	64	66	70	83	69	71	96	178	176	86
Gender										
Male	35	44	40	43	43	48	55	106	109	57
Female	29	22	30	40	26	23	40	70	65	29
Race/Ethnicity										
White	17	19	16	44	28	26	29	62	44	24
Black	0	1	1	0	0	0	3	5	5	4
Hispanic	37	38	45	25	34	36	52	78	80	41
Asian	1	1	0	8	5	3	5	12	13	8
NHOPI*	0	0	1	0	0	0	0	0	1	1
AI/AN*	1	0	0	0	0	0	0	0	0	2
Multiracial	0	0	1	0	0	2	1	0	2	0
Other/Unknown	8	7	6	6	2	4	6	21	31	6
Age Group										
0-4 years	14	10	10	4	4	7	9	8	11	4
5-14 years	15	12	15	9	14	8	12	14	21	4
15-24 years	3	7	7	12	12	13	18	17	25	9
25-44 years	12	20	19	32	23	20	27	66	65	35
45-64 years	16	14	16	17	16	18	22	53	36	29
65 years & over	4	3	3	9	0	5	8	20	17	5
Unknown	0	0	0	0	0	0	0	2	1	0

* NHOPI is Native Hawaiian, Other Pacific Islander; AI/AN is American Indian / Alaskan Native

Table 1b. Orange County Shigellosis Rate* with Gender, Race/Ethnicity and Age Group Detail, 2011 – 2020

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Cases	2.1	2.1	2.3	2.6	2.2	2.2	3.0	5.6	5.5	2.7
Gender										
Male	2.3	2.9	2.6	2.8	2.7	3.0	3.5	6.7	6.8	3.6
Female	1.9	1.4	1.9	2.5	1.6	1.4	2.5	4.4	4.1	1.8
Race/Ethnicity										
White	1.3	1.4	1.2	3.3	2.1	1.9	2.2	4.6	3.3	1.8
Black	--	--	--	--	--	--	--	10.3	10.3	--
Hispanic	3.6	3.6	4.2	2.3	3.1	3.2	4.6	6.9	7.1	3.6
Asian	--	--	--	1.4	0.9	--	0.9	2.1	2.2	1.4
Age Group										
0-4 years	7.3	5.2	5.2	--	--	3.6	4.6	4.1	5.6	--
5-14 years	3.7	2.9	3.7	2.2	3.5	2.0	3.0	3.5	5.2	--
15-24 years	--	1.5	1.5	2.7	2.7	3.0	4.2	4.0	6.1	2.3
25-44 years	1.4	2.3	2.2	3.7	2.7	2.3	3.1	7.7	7.6	4.1
45-64 years	2.0	1.8	2.0	2.1	1.9	2.2	2.6	6.4	4.4	3.6
65 years & over	--	--	--	2.2	--	1.1	1.7	4.1	3.4	0.9

*rates for cells with less than five cases and Other/Unknown are not calculated. Due to the small number of cases, rates for NHOPI, AI/AN and Multiracial categories are not presented

Note: color intensity displays cells with higher rates in that category

In Orange County and California, each case of shigellosis is investigated to identify infection source and to prevent further transmission. In addition, according to Title 17, Section 2505, all isolates of *Shigella* bacteria in Orange County are to be sent to the Orange County Public Health Laboratory (OCPHL) to be confirmed and strain typed. Since 2018, there has been an increased use of culture independent diagnostic tests (CIDT) done for identification of shigellosis cases. The increase in cases in 2018 and 2019 may be partially related to these kinds of tests. CIDTs provide a faster result and thus are of clinical benefit. However, identifying the *Shigella* species is not possible unless a culture is performed, leading to an increase in recent years in diagnoses of *Shigella* with unknown species (see Figure 2).

Incidence of shigellosis has been higher in recent years among males, people who identify as Hispanic or Latino, and ages 25 to 44 years. While *Shigella* can be easily transmitted in day care or other childcare settings, few cases from these setting have been reported in Orange County in the last decade.

Key Points from the Following Graphs and Tables:

- Orange County tends to have a lower rate of shigellosis than the United States or California, though rates have increased in recent years, similar to the rest of the state (Table 2 and Figure 1).
- Until recent years, Orange County cases were more likely to be *S. sonnei* than *S. flexneri* (Figures 2 and 3).
- More cases of *S. flexneri* are diagnosed among men and more of these cases are likely to be men who report have sex with other men than *S. flexneri* species (Tables 4 and 5).
- Antibiotic susceptibility patterns vary somewhat by shigellosis species (Figures 4 and 5).
- *S. flexneri* isolates are generally resistant to ampicillin, while *S. sonnei* is generally susceptible.
- Both species tend to resistant to trimethoprim/sulfamethoxazole.
- Both species are usually susceptible to third generation cephalosporins and ciprofloxacin.

Table 2. Shigellosis Incidence Rates in United States, California, and Orange County

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
United States ¹	4.3	4.9	4.1	6.5	7.3	6.5	4.6	5.0	5.7	--
California ²	2.5	2.9	2.8	4.2	5.6	5.3	6.7	8.6	8.6	--
Orange County	2.1	2.1	2.3	2.6	2.2	2.2	3.0	5.6	5.5	2.7

¹ Summary of Notifiable Infectious Diseases and Conditions — United States, 2015. & National Notifiable Diseases Surveillance System, 2016 - 2019 Annual Tables of Infectious Disease Data. Atlanta, GA. <https://www.cdc.gov/nndss/infectious-tables.html>.

² CDPH INFECTIOUS DISEASES BRANCH (IDB) YEARLY SUMMARIES OF SELECTED COMMUNICABLE DISEASES IN CALIFORNIA, 2011-2019, Center for Infectious Diseases - Division of Communicable Disease Control - Infectious Diseases Branch - Surveillance and Statistics Section, July 2020

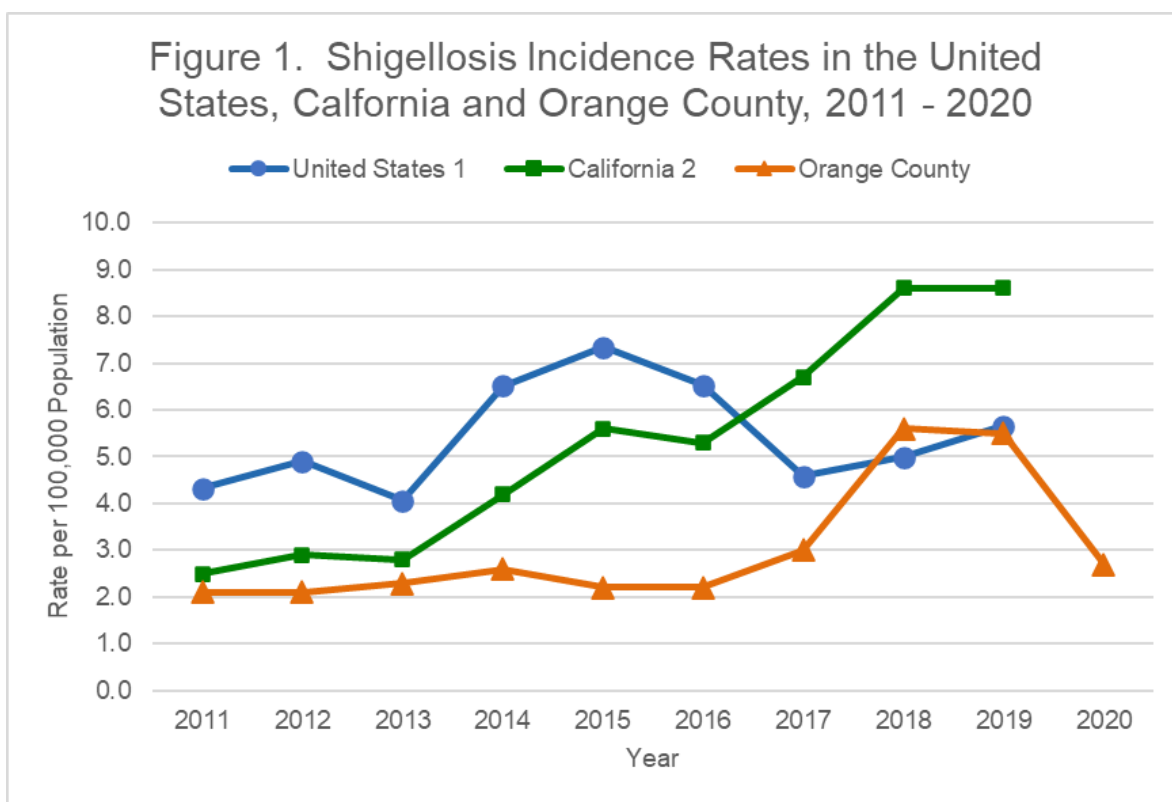


Figure 2. Cases of Shigellosis by Species Type and Year, Orange County, 2011 - 2020

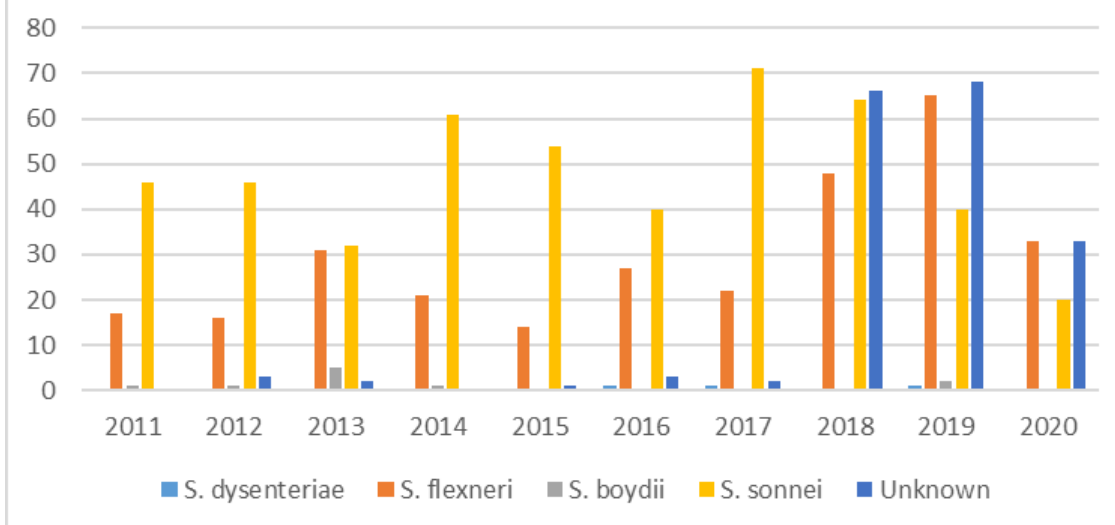


Figure 3. Percent of Shigellosis by Species Type and Year, Orange County, 2011-2020

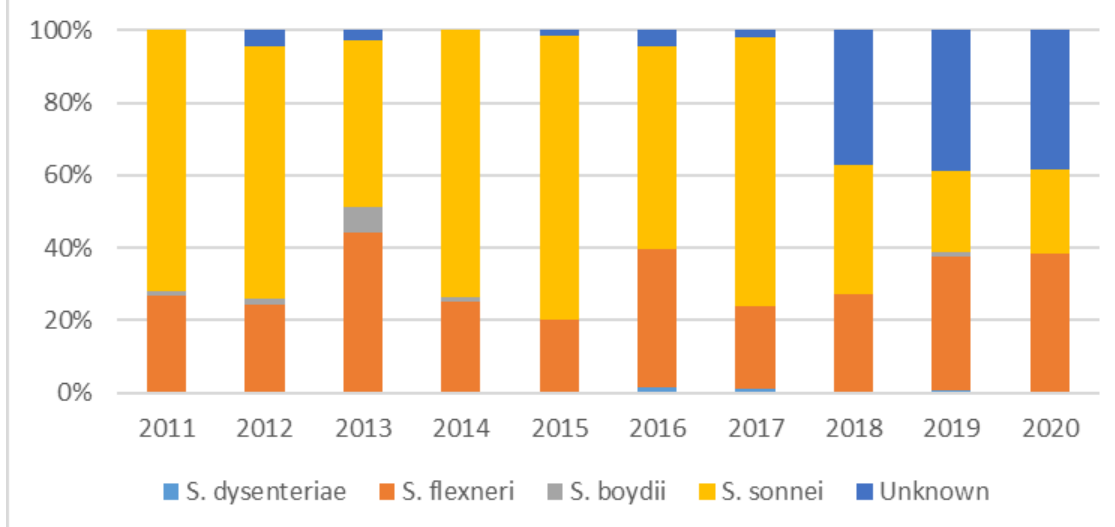


Table 4. Shigella flexneri and S. sonnei by Gender, Orange County, 2011 - 2020

Species by Gender	Year																			
	2011		2012		2013		2014		2015		2016		2017		2018		2019		2020	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
<i>S. flexneri</i>	17		16		31		21		14		27		22		47		65		33	
Female	7	41%	2	13%	9	29%	6	29%	0	0%	4	15%	7	32%	8	17%	13	20%	4	12%
Male	10	59%	14	88%	22	71%	15	71%	14	100%	23	85%	15	68%	39	83%	52	80%	29	88%
<i>S. sonnei</i>	46		46		32		61		54		40		71		64		40		20	
Female	21	46%	18	39%	17	53%	34	56%	25	46%	17	43%	31	44%	31	48%	22	55%	10	50%
Male	25	54%	28	61%	15	47%	27	44%	29	54%	23	58%	39	55%	33	52%	17	43%	10	50%

Table 5. *Shigella flexneri*, *S. sonnei* and *S. Unknown* by MSM Status, Orange County, 2016 - 2020

Male is MSM?	Year									
	2016		2017		2018		2019		2020	
	N	%	N	%	N	%	N	%	N	%
<i>S. flexneri</i>	23		15		39		52		29	
Yes	13	57%	6	40%	19	49%	24	46%	17	59%
No	5	22%	9	60%	7	18%	10	19%	10	34%
<= 17 years	4	17%	0	0%	1	3%	2	4%	1	3%
Unknown	1	4%	0	0%	12	31%	16	31%	1	3%
<i>S. flexneri</i>	23		39		33		17		10	
Yes	1	4%	6	15%	10	30%	1	6%	1	10%
No	12	52%	20	51%	10	30%	3	18%	7	70%
<= 17 years	8	35%	13	33%	10	30%	11	65%	1	10%
Unknown	2	9%	0	0%	3	9%	2	12%	1	10%
<i>S. Unknown</i>	2		0		34		39		18	
Yes	0	0%	--	--	6	18%	8	21%	6	33%
No	0	0%	--	--	14	41%	15	38%	9	50%
<= 17 years	1	50%	--	--	3	9%	6	15%	3	17%
Unknown	1	50%	--	--	11	32%	10	26%	0	0%

Figure 4. *Shigella flexneri* Isolates Susceptibility Testing Results by Year 2016-2020, Orange County

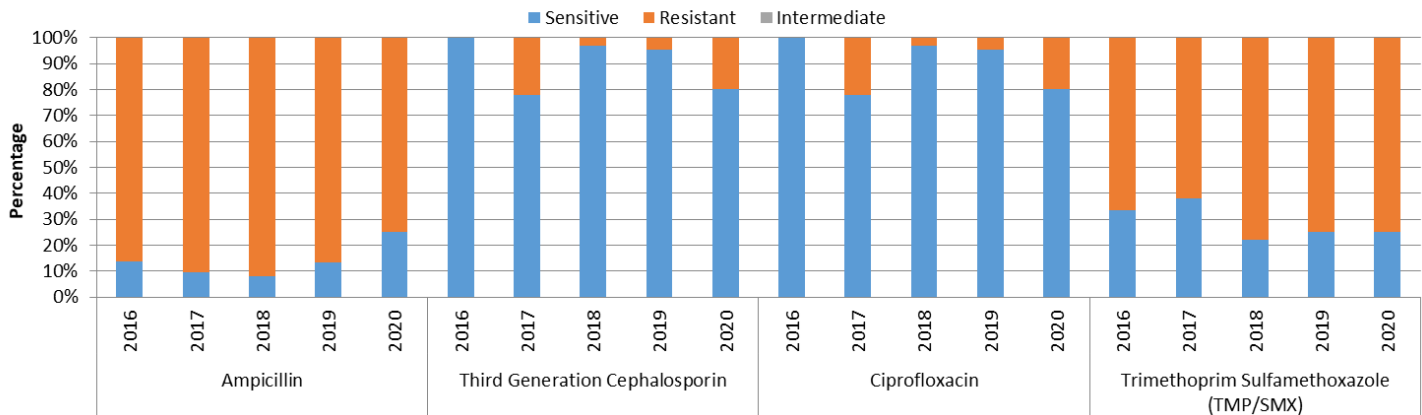


Figure 5. *Shigella sonnei* Isolates Susceptibility Testing Results by Year 2016-2020, Orange County

