

## Antibiotic-Resistant Shigellosis in Orange County

### Overview

- *Shigella* is a common cause of bacterial enteritis. The bacteria is transmitted fecal-orally and is very infectious, with a small inoculum causing illness. Most transmission occurs person-to-person but can also occur via contaminated water or food.
- A significant percentage of Orange County shigellosis cases are currently found in men who have sex with men (MSM).
- Antimicrobial resistance in *Shigella* isolates is an increasing public health issue in the County and nationally.

### Provider Recommendations

- Consider the diagnosis of *Shigella* in patients who present with fever and diarrhea, particularly if the diarrhea is bloody or the case is MSM.
- Among patients you suspect of having shigellosis, request stool specimens for culture or a culture-independent diagnostic test (CIDT) such as *Shigella* polymerase chain reaction (PCR).
- If a CIDT is positive for shigellosis, order a stool culture to obtain an antibiotic susceptibility pattern for the isolate.
- Treat all patients experiencing severe symptoms. Oral ciprofloxacin or azithromycin are appropriate initial treatment options for outpatient therapy.
- Not all cases need antibiotic treatment. Mild shigellosis will resolve without antibiotic therapy.
- Consider treating MSM to shorten the duration of illness and to reduce shedding and the risk of transmission.
- Advise MSM to avoid sex for at least two weeks after recovery from illness.
- Men who have sex with men (MSM), persons experiencing homelessness (PEH), and immunocompromised individuals are at increased risk for shigellosis, at increased risk for infection with multidrug-resistant *Shigella*, and also more likely to experience severe disease requiring antibiotic therapy.
- Report any suspect or confirmed shigellosis cases, as well as suspected treatment failures with use of ciprofloxacin or azithromycin, to Orange County Public Health at 714-834-8180.

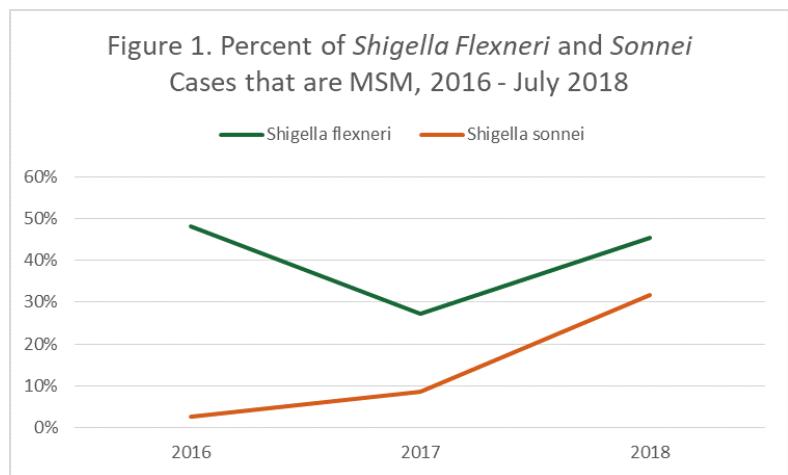
## Background

Orange County had an average of 78 cases of shigellosis reported annually from 2013-2017. 66% of cases in this period were *S. sonnei*, while *S. flexneri* accounted for 30%. *S. boydii* and *S. dysenteriae* infections are rare in the County and generally related to international travel. In the first half of 2018, there was an even split between *S. flexneri* and *S. sonnei*, with each accounting for 50% of reported cases.

The CDC estimates that only one in 20 cases of shigellosis are diagnosed. Diagnosed cases skew toward severe disease: from the start of 2017 through June 30, 2018, about 40% of Orange County cases required hospitalization.

The majority of *S. flexneri* cases identified since the start of 2016 have been found in MSM and the proportion of *S. Sonnei* who identify as MSM has risen precipitously since 2016 (Figure 1). Through the end of May in 2018, 56% of *S. flexneri* cases were MSM and 45% of *S. sonnei* cases were MSM.

Since the start of 2016, 18% of cases reported international travel, with a higher percentage reported during the summer months. Sixty-two percent of international travelers acquired infection following travel to Mexico.



## Shigella and Antibiotic Resistance

Antibiotic resistance in *Shigella* isolates is a developing issue here and around the country. Ciprofloxacin is a reasonable empiric outpatient treatment option, but *Shigella* resistance to ciprofloxacin has been increasing in the County. In the first five months of 2018, 17% of isolates tested have been ciprofloxacin-resistant. In June of this year, the Centers for Disease Control and Prevention (CDC) reported an increasing number of *Shigella* isolates that test susceptible to ciprofloxacin (minimum inhibitory concentration [MIC] values of 0.12-1  $\mu$ g/mL), but harbor one or more resistance mechanisms. The clinical significance of this low-level resistance is uncertain. But given this information, combined with the resistance patterns seen in *Shigella* isolates in the County, providers should be mindful that ciprofloxacin will not always be effective.

Azithromycin is another appropriate empiric treatment option. Most clinical laboratories do not test for azithromycin susceptibility, but like ciprofloxacin, *Shigella* isolates that are azithromycin-resistant are increasingly being identified nationally.

Resistance of both *S. flexneri* and *S. sonnei* isolates to ampicillin and trimethoprim/sulfamethoxazole remains high in the County, neither should be used for empiric initial therapy.

Providers should monitor patients placed on antibiotic treatment for potential treatment failure. If not obtained initially, clinicians should submit a stool specimen for antimicrobial susceptibility testing if treatment failure is suspected. Providers should also report any possible clinical failures with use of ciprofloxacin or azithromycin to Orange County Public Health.

The CDC advisory regarding increasing ciprofloxacin and azithromycin resistance in *Shigella* isolates can be found at <https://emergency.cdc.gov/han/han00411.asp>

## Resources

CDC Shigellosis website:

<https://www.cdc.gov/shigella/index.html>

CDPH Shigellosis website:

<https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Shigellosis.aspx>