



## CDPH Health Advisory

### Rise in Extensively Drug-Resistant *Shigella* Strains- January to May 2024

August 9, 2024

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The California Department of Public Health (CDPH) issued a [health advisory](#) today regarding an increase in extensively drug-resistant (XDR) shigellosis in California. Los Angeles County has seen a significant increase with 5 XDR shigellosis cases reported in 2021 and 30 thus far identified in 2024. The highest number, 45, was identified in 2023. *Shigella* disproportionately affects men who have sex with men (MSM).

Healthcare providers are asked to be vigilant about suspecting and reporting cases of XDR *Shigella* infection, and to educate patients at increased risk for shigellosis about prevention and risk reduction practices.

Healthcare providers should tailor any shigellosis antibiotic treatment to available antimicrobial susceptibility testing (AST) data. Clinical laboratories should perform complete antimicrobial susceptibility testing that includes azithromycin, ciprofloxacin, ceftriaxone, trimethoprim-sulfamethoxazole [TMP-SMX], and ampicillin, on available *Shigella* isolates as resources allow.

#### **Providers should report shigellosis infections to Public Health within one working day.**

*Los Angeles County DPH Acute Communicable Disease Control:*

- Fax a [CMR](#) to 888-397-3778 or 213-482-5508 or send via secure email to [ACDC-MorbidityUnit@ph.lacounty.gov](mailto:ACDC-MorbidityUnit@ph.lacounty.gov), or
- Call 888-397-3993 weekdays 8:30 am–5:00 pm.

*Long Beach Health and Human Services:*

- Fax a [Long Beach CMR](#) to 562-570-4374 or send by secure email to [LBEpi@longbeach.gov](mailto:LBEpi@longbeach.gov), or
- Call 562-570-4302 weekdays 8:00 am-5:00 pm

*Pasadena Public Health Department:*

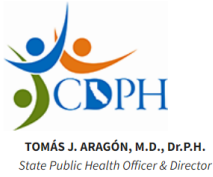
- Complete a [Pasadena CMR](#) and send by fax to 626-744-6115, or
- Call 626-744-6089 weekdays 8:00 am-5:00 pm

**Read the CDPH communication [online](#).**

You can also copy and paste this link into your browser:

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## Health Advisory

### TO: Healthcare Providers Rise in Extensively Drug-Resistant *Shigella* Strains-January to May 2024 8/9/2024

#### Key Messages

- Extensively drug-resistant (XDR) *Shigella* infections have been rising across California for several years, with a sharp increase in cases in 2024 to date.
- In the first five months of 2024, 12% of *Shigella* isolates sequenced have been identified as XDR.
  - Twenty-one percent of isolates among males 25-34 years of age were identified as XDR.
  - Among adult male XDR patients with available data, 75% self-identified as men who have sex with men (MSM).
- Healthcare providers should tailor shigellosis antibiotic treatment to available antimicrobial susceptibility testing (AST) data, and counsel patients at increased risk of *Shigella* infection (see below) on prevention and risk reduction practices.
- Clinical laboratories should perform complete antibiotic susceptibility testing that includes azithromycin, ciprofloxacin, ceftriaxone, trimethoprim-sulfamethoxazole [TMP-SMX], and ampicillin, on available *Shigella* isolates as resources allow.
- Local health departments (LHDs) should monitor local XDR *Shigella* trends and continue reporting XDR isolates. In addition, they should make community stakeholders aware of this rise in XDR *Shigella*, particularly for MSM populations.

#### Situational Update

The California Department of Public Health (CDPH) has been monitoring an increase in reported extensively drug-resistant (XDR) *Shigella* infections (shigellosis), particularly since 2024 to date. From January through May 2024, 12% (118/978) of California *Shigella* isolates were reported as XDR based on whole genome sequencing, compared to 6.8% in 2023 (78% increase). Males aged 25-34 years old, the group with the highest rates of shigellosis in California, also had the highest percentage of isolates identified as XDR from January through May 2024 (21%). Among adult male patients with XDR *Shigella* infections, 75% self-identified as MSM. The 118 reported XDR cases in California from January through May 2024 are likely

an underestimate of total statewide burden of XDR *Shigella* infections, given that most people with *Shigella* infections do not seek healthcare or receive testing.

## Background

The California Department of Public Health (CDPH) has been monitoring an increase in reported extensively drug-resistant (XDR) *Shigella* infections (shigellosis), particularly since 2024 to date. From January through May 2024, 12% (118/978) of California *Shigella* isolates were reported as XDR based on whole genome sequencing, compared to 6.8% in 2023 (78% increase). Males aged 25-34 years old, the group with the highest rates of shigellosis in California, also had the highest percentage of isolates identified as XDR from January through May 2024 (21%). Among adult male patients with XDR *Shigella* infections, 75% self-identified as MSM. The 118 reported XDR cases in California from January through May 2024 are likely an underestimate of total statewide burden of XDR *Shigella* infections, given that most people with *Shigella* infections do not seek healthcare or receive testing.

## Recommendations

### Shigellosis

Shigellosis is an acute enteric infection by *Shigella* spp. that is an important cause of domestically acquired and travel-associated bacterial diarrhea in the United States (U.S.). *Shigella* bacteria are transmitted by the fecal-oral route, directly through person-to-person contact including sexual contact, and indirectly through contaminated food, water, and other routes. *Shigella* are easily transmitted because of the low infectious dose (as few as 10–100 organisms), and outbreaks tend to occur among people in close-contact settings [1].

Historically, shigellosis has predominantly affected young children (aged 1–4 years) in the U.S. More recently, there has been an increase nationally in antibiotic-resistant *Shigella* infections among adult populations [2], especially:

- Gay, bisexual, and other men who have sex with men (MSM)
- People experiencing homelessness (PEH)
- International travelers
- People with HIV (PWH)

Shigellosis usually results in an inflammatory diarrhea that can be bloody and may also lead to fever, abdominal cramping, and tenesmus. Most people with diarrheal illness, including shigellosis, require only supportive care and fluid replacement. For those who do require antibiotic therapy, antibiotic choice should be guided by antimicrobial susceptibility testing (AST) performed by a clinical lab.

Antibiotics may be indicated to:

- Shorten the duration of illness (by about 2 days), or
- Reduce the likelihood of transmission:

- during outbreaks,
- in institutional settings,
- from food handlers,
- to immunocompromised persons or those being treated with immunosuppressive drugs, and
- to people living with HIV.

In the U.S., recommended empiric antibiotics include azithromycin, ciprofloxacin, or ceftriaxone. Ampicillin or TMP-SMX are recommended as alternative treatments for susceptible strains [3].

### **XDR *Shigella***

CDC defines XDR *Shigella* bacteria as strains that are resistant to all commonly recommended empiric and alternative antibiotics — azithromycin, ciprofloxacin, ceftriaxone, trimethoprim-sulfamethoxazole (TMP-SMX), and ampicillin. XDR *Shigella* isolates included in this summary have been identified based on whole genome sequencing performed at select public health laboratories in California and identification of resistance genes.

Given the treatment challenges posed by XDR *Shigella*, CDPH encourages clinical laboratories to perform complete AST (azithromycin, ciprofloxacin, ceftriaxone, trimethoprim-sulfamethoxazole (TMP-SMX), and ampicillin) on all available *Shigella* isolates and report results to local health jurisdictions and providers in a timely manner. XDR *Shigella* strains can spread antibiotic resistance genes to other enteric bacteria.

Clinicians treating patients infected with XDR strains have limited antibiotic treatment options and should tailor treatment if necessary to available antibiotic susceptibility testing data. CDPH asks healthcare professionals to be vigilant about suspecting and reporting cases of XDR *Shigella* infection to their local health department (LHD), asking about social and behavioral risk factors for *Shigella* transmission, and educating patients and communities at increased risk about risk reduction and infection prevention practices. CDPH will continue to monitor XDR *Shigella* infections and track *Shigella* isolates with unique or worrisome antibiotic susceptibility patterns and genetic resistance markers.

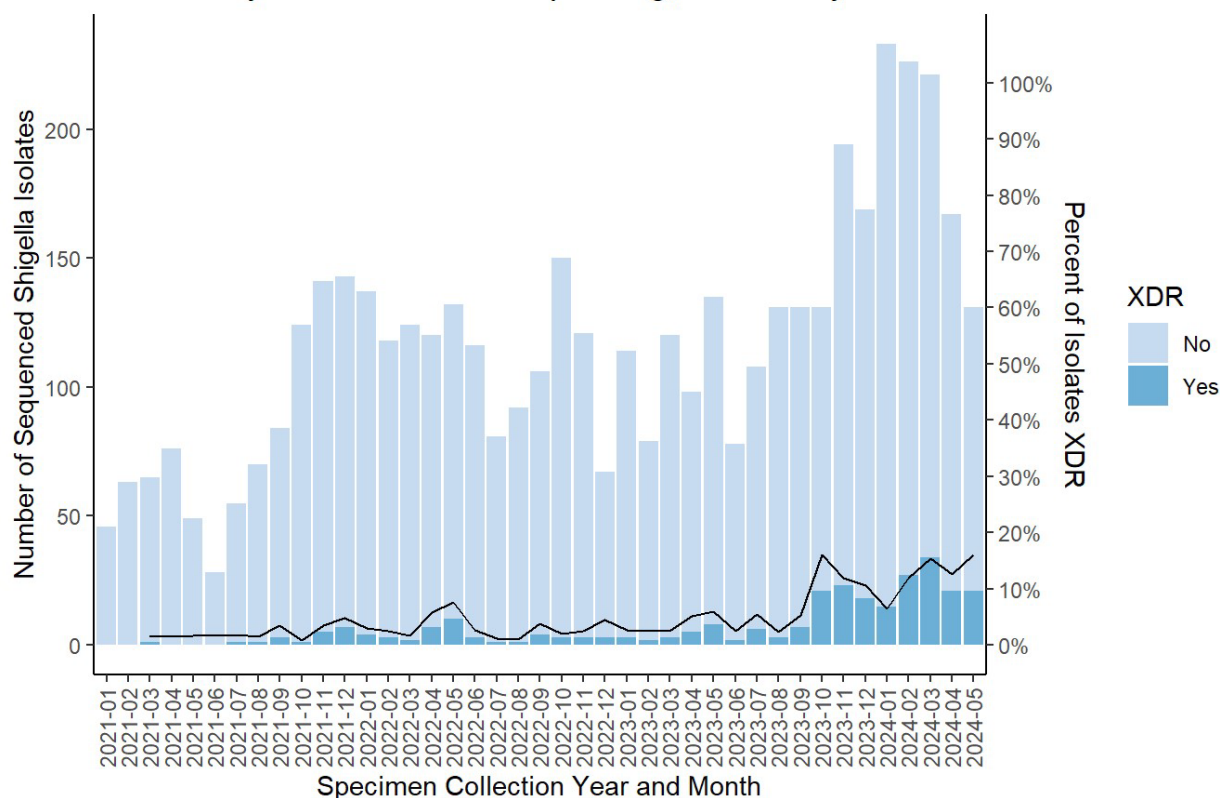
### **Epidemiology of XDR *Shigella* in California**

Since first detected in California in 2017, XDR *Shigella* has been increasing in prevalence. By 2022, 3.2% of *Shigella* isolates were XDR and further increased to 6.8% in 2023. From January through May 2024, 12% (118/978) of California *Shigella* isolates were reported as XDR based on whole genome sequencing performed at public health laboratories. Thirty-seven percent (44/118) of XDR isolates were reported from Southern California and 44% (52/118) from the San Francisco Bay Area. *Shigella sonnei* isolates accounted for the largest percentage (78%), followed by *Shigella flexneri* (22%).

The median age of patients with XDR *Shigella* infections was 38 years (range 1-84 years), with 52% of patients between 25 and 44 years old. Most (86%) patients were adult males (n=102). Among 89 patients with available information on race and ethnicity, 53% (n=47) were non-

Hispanic white, 21% (n=19) Hispanic, 11% (n=10) non-Hispanic Black or African American, 7% (n=7) non-Hispanic Asian or Pacific Islander, and 7% (n=6) other or multi-racial. Among adult males with XDR *Shigella* infections and available information, 75% (48/64) self-identified as MSM. Among all patients with available information, 9% (8/94) were persons experiencing homelessness and 10% (9/88) reported international travel.

Extensively Drug-Resistant (XDR) *Shigella* Isolates in California Identified by Whole Genome Sequencing, 2021 - May 2024



XDR *Shigella* bacteria are defined as resistant to azithromycin, ciprofloxacin, ceftriaxone, trimethoprim-sulfamethoxazole, and ampicillin.

Includes *Shigella* isolates sequenced in California PulseNet Laboratories (California Department of Public Health Microbial Diseases Laboratory, Los Angeles County Public Health Laboratory, Orange County Public Health Laboratory, Santa Clara County Public Health Laboratory); data are preliminary and based on presence of resistance genes and mutations found in whole genome sequences of bacterial DNA.

## Recommendations

### Recommendations for Healthcare Professionals

#### Diagnosis

- Consider shigellosis in the differential diagnosis of acute diarrhea, especially for patients at higher risk for *Shigella* infection, including:

- Young children
- MSM
- People experiencing homelessness
- International travelers
- Immunocompromised persons
- People with HIV (PWH)
- If shigellosis is suspected,
  - Ask the patient about relevant exposures and social history, including [sexual activity](#) (and gender of sex partners), housing status, and international travel.
  - When ordering diagnostic testing for *Shigella*, stool culture is preferred for patients who will require antibiotic treatment.
- If a culture-independent diagnostic test ([CIDT](#)) is performed instead of culture and *Shigella* bacteria are detected, request on sample submission that the clinical laboratory perform reflex culture.
  - CIDTs (such as PCR panels) cannot provide information on antibiotic susceptibility or resistance profile.
- If a culture is positive for *Shigella*, order antibiotic susceptibility testing (AST) to inform antibiotic selection. Ensure AST covers complete antibiotic profile for *Shigella* (azithromycin, ciprofloxacin, ceftriaxone, trimethoprim-sulfamethoxazole, and ampicillin)

### **Clinical Management**

- To date, there are no CDC or CDPH recommendations for treating XDR shigellosis in the United States.
- Most patients recover from shigellosis without antibiotic treatment.
- CDPH and CDC recommend using antibiotics *only when clinically indicated* as overuse can contribute to the development of [antibiotic resistance](#).
- Healthcare providers treating XDR shigellosis should consult with a specialist knowledgeable in treating antibiotic-resistant bacteria to determine the best treatment options.
- Use AST results to guide antibiotic treatment selection, when available.
- Encourage patients to inform you if symptoms do not improve within 48 hours after beginning antibiotics.

### **Considerations for Sexual Health**

Increases in drug-resistant *Shigella* infections have been described among adult men and may be associated with transmission among MSM. Cases of [shigellosis co-occurring with other sexually transmitted infections](#) (STIs), including HIV, have been described among MSM [4]. For additional considerations, see the [CDPH Shigellosis Among MSM](#) webpage.

Clinicians caring for patients with shigellosis should:

- [Take a sexual history](#) if shigellosis is confirmed or suspected.

- People with acute proctitis and concern for sexually transmitted proctocolitis or enteritis [should be tested for other STIs, including HIV, mpox, syphilis, gonorrhea, and chlamydia](#) at exposed sites [4].
- Encourage all persons with shigellosis to notify their household contacts and sex partners and urge them to monitor for symptoms of shigellosis and seek medical evaluation and treatment if symptomatic. Exceptions to this practice include circumstances posing a risk for intimate partner violence [5].
- Counsel patients to abstain from sexual contact for 2 weeks following resolution of diarrheal symptoms.
- Educate high risk patients on shigellosis prevention strategies;
  - Ask sexual partner(s) if they have or recently had diarrhea. If so, WAIT to have sex until at least 2 weeks after the diarrhea resolved.
  - Wash hands, genitals, and anus with soap and water before and after sexual activity.
  - Wash sex toys and douching materials with soap and water after each use
  - Wash hands after touching sex toys, douching materials, external and internal condoms, dental dams and any other item that might have been in contact with vagina or anus.
  - Avoid practices that might cause oral contact with feces during sex, such as oral anal sex (rimming) or having unwashed hands or toys near or in mouth after contact with anus or genitals.
  - Consider using [condoms or dental dams](#) during oral-genital sex and oral-anal sex to reduce contact with fecal matter. Consider using latex gloves during anal fingering or fisting.

### **Reporting**

- Shigellosis is a notifiable disease by the [California Code of Regulations, Title 17 Section 2500 requirements](#). Healthcare professionals and clinical laboratories should report all cases to their LHD within one working day from the time that the laboratory notifies the health care provider or other person authorized to receive the report.
- Healthcare professionals should consult their LHD for guidance on when patients may return to childcare or work.

### **Counseling Patients**

Counsel patients with suspected or confirmed shigellosis about measures they can take to keep others healthy. Patients taking antibiotics should continue to follow prevention measures.

All patients with suspected or confirmed shigellosis should:

- Stay home from daycare or preschool or from jobs in healthcare, food service, or childcare while sick or until the LHD says it's safe to return.



- During diarrhea and for 2 weeks after it ends,
  - Abstain from sex (anal, oral, penile, or vaginal) (See Considerations for Sexual Health above)
  - [Wash hands](#) often with soap and water for at least 20 seconds, including at key times such as after using the toilet, before and after changing diapers, cleaning up after someone who is sick, and before preparing or eating food.
  - Do not prepare food for others, if possible.
  - [Stay out of recreational water](#), including swimming pools, hot tubs, water playgrounds, oceans, lakes, and rivers.

### Recommendations for Laboratories

- Clinical laboratories are required by [California Code of Regulations Title 17 Section 2505](#) (PDF) requirements to submit all *Shigella* isolates, including known or suspected XDR *Shigella* isolates, to a local or state public health laboratory.
- Clinical laboratories must attempt to obtain a reflex culture on positive clinical samples for *Shigella* by culture independent diagnostic tests (CIDT), such as PCR, per [California Code of Regulations Title 17 Section 2505](#) (PDF) requirements.
- Clinical laboratories should perform and report complete AST (azithromycin, ciprofloxacin, ceftriaxone, trimethoprim-sulfamethoxazole (TMP-SMX), and ampicillin) on available *Shigella* isolates as resources allow.

### Recommendations for Public Health Officials

- Be aware that:
  - *Shigella* transmission is difficult to control because the bacteria spread easily and rapidly between people, including through sexual activity.
  - XDR *Shigella* infections have been reported with increasing frequency, particularly among MSM.
- Collect and record demographic and risk factor data (e.g., sexual orientation and housing status) in CalREDIE or local surveillance system on all reported cases of shigellosis, especially for known XDR *Shigella* infections.

### Resources

- [CDPH Shigellosis Homepage](#)
- [CDPH Shigellosis for MSM](#)
- [CDC Shigellosis](#) webpage
- [CDC Antimicrobial Resistance](#)
- [Handwashing](#) and [Hand Hygiene in Healthcare Settings](#)
- [Antimicrobial Resistance](#)
- [Antibiotic Prescribing and Use](#)



## References

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2. Shiferaw, B., Solghan, S., Palmer, A., Joyce, K., Barzilay, E. J., Krueger, A., & Cieslak, P. (2012). Antimicrobial Susceptibility Patterns of Shigella Isolates in Foodborne Diseases Active Surveillance Network (FoodNet) Sites, 2000–2010. *Clinical Infectious Diseases*, 54(suppl\_5), S458–S463. <https://doi.org/10.1093/cid/cis230>
3. Shane, A. L., Mody, R. K., Crump, J. A., Tarr, P. I., Steiner, T. S., Kotloff, K., Langley, J. M., Wanke, C., Warren, C. A., Cheng, A. C., Cantey, J., & Pickering, L. K. (2017). 2017 Infectious Diseases Society of America Clinical Practice Guidelines for the Diagnosis and Management of Infectious Diarrhea. *Clinical Infectious Diseases*, 65(12), e45–e80. <https://doi.org/10.1093/cid/cix669>
4. Workowski KA, Bachmann LH, Chan PA, et al. Sexually Transmitted Infections Treatment Guidelines, 2021. *MMWR Recomm Rep* 2021;70(No. RR-4):1–187. DOI: <http://dx.doi.org/10.15585/mmwr.rr7004a1>
5. McNeil CJ, Kirkcaldy RD, Workowski K. [Enteric infections in men who have sex with men](#). *Clin Infect Dis*. 2022 Apr; 74(Suppl 2): p. S169–78.

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