

Key Findings

Yersiniosis is an infection caused by *Yersinia enterocolitica* or *Yersinia pseudotuberculosis*, which are types of bacteria that live naturally in many animals, especially pigs. People with yersiniosis may have diarrhea, fever, and severe stomach pain. People usually get yersiniosis by eating contaminated food, especially raw or undercooked pork, or by having contact with someone that touched contaminated food or prepared a pork product, such as pig intestines. People can also get infected by drinking contaminated milk or untreated water, or by having contact with infected animals or their feces (poop).

Yersiniosis in California from 2013 through 2019

Total Cases: There were a total of 1,362 new yersiniosis cases from 2013 through 2019. This is an average of 195 cases each year.

Rate: The average annual rate of new yersiniosis cases during 2013-2019 was less than 1 case per 100,000 people in California.

- **By County:** Of the counties that reported at least 1 case per year during 2013-2019, the average rate was highest in Ventura County (about 2 cases per 100,000 people) and San Mateo County (1 case per 100,000 people).
- **By Sex:** The average rate was similar in females and males, but each group had less than 1 case per 100,000 people.
- **By Age Group:** The average rates were highest in children aged less than 1 year and adults aged 85 years and older (both groups with less than 2 cases per 100,000 people).
- **By Race/Ethnicity:** For cases where race and ethnicity information was available, the highest percentage of cases was in people who reported non-Hispanic White race/ethnicity (55%).

To help prevent yersiniosis, do not eat raw or undercooked pork. In addition, drink and eat only milk or dairy products that have been pasteurized. It is also important to [follow food safety guidelines](#) when preparing food, especially by keeping raw pork away from ready-to-eat foods and cooking food to the right temperature. To prevent the spread of *Yersinia*, wash hands with soap and water before preparing food, immediately after handling any raw pork or meat, and after touching animals (especially pigs and other farm animals) or being in areas where animals live. Keep children away from areas where raw pork is being handled or prepared to keep children from getting sick.

For more information about yersiniosis, please visit the [U.S. Centers for Disease Control and Prevention Yersiniosis webpage](#). For details about key infectious diseases in California, please visit the [CDPH Surveillance and Statistics Section webpage](#).

Background

Yersiniosis is a gastrointestinal illness most often caused by *Yersinia enterocolitica* bacteria, less commonly by *Y. pseudotuberculosis* bacteria. The U.S. Centers for Disease Control and Prevention (CDC) estimates that *Y. enterocolitica* causes 117,000 illnesses, 640 hospitalizations, and 35 deaths in the U.S. every year.¹ The national *Healthy People 2020* target objective for yersiniosis was to have an incidence rate lower than 0.3 cases per 100,000 population.²

Y. enterocolitica are naturally carried in the intestines and oral cavities of pigs. However, other farm animals, rodents, dogs and cats can also carry strains that cause human illness.^{3, 4} Infection occurs most commonly in young children and in the elderly. Consuming or handling contaminated raw or undercooked pork is the leading cause of yersiniosis; illness, especially among infants and young children, can also occur after direct or indirect contact with people who have handled contaminated food or prepared a pork product (such as pig intestines). Yersiniosis may also occur after consuming unpasteurized milk and milk products, drinking untreated water, or exposure to infected animals or their feces. Rarely, infection can occur through person-to-person contact or through transfusion with contaminated blood.³

Symptoms of yersiniosis usually begin within 4-7 days after exposure and last 1-3 weeks or longer. Symptoms in young children usually include fever, abdominal pain, and diarrhea that may be bloody.^{1, 5} In older children and adults, abdominal pain may localize to the right side of the abdomen, which may be mistaken for appendicitis. Post-infectious complications, including reactive arthritis and painful skin lesions called erythema nodosum, can rarely occur.^{5, 6} Most illness is self-limited, and treatment with antibiotics should be reserved for severe cases.⁶

This report describes the epidemiology of confirmed and probable yersiniosis cases in California from 2013 through 2019. Due to multiple factors that can contribute to underreporting, data in this report are likely underestimates of actual disease incidence. For a complete discussion of the definitions, methods, and limitations associated with this report, please refer to the *Technical Notes*.⁷

California Reporting Requirements and Surveillance Case Definition

California Code of Regulations (CCR), Title 17, Section 2500 requires health care providers to report suspected cases of yersiniosis to their local health department within one working day of identification or immediately by telephone if an outbreak is suspected.⁸ Per CCR, Title 17, Section 2505, laboratories are required to report laboratory testing results suggestive of non-*pestis Yersinia* infection to either the California Reportable Disease Information Exchange (CalREDIE) via electronic laboratory reporting or the local health department; reporting must occur within one working day after the health care provider has been notified.⁹

California regulations require cases of yersiniosis to be reported to the California Department of Public Health (CDPH). Prior to 2019, no standard national case definition existed. Beginning in 2019, the Council of State and Territorial Epidemiologists (CSTE) defined a confirmed case of yersiniosis as an infection in which *Y. enterocolitica* or *Y. pseudotuberculosis* was isolated from a clinical specimen. A probable case was defined as an infection in which any *Yersinia* species other than *Y. pestis* was detected in a clinical specimen using a nucleic acid amplification culture-independent diagnostic test (CIDT) or as an infection with an established epidemiologic link to either a laboratory-confirmed or CIDT-positive case.¹⁰ During the 2013-

2019 surveillance period, CDPH counted cases that were classified as confirmed or probable by local health departments or satisfied the CSTE surveillance case definition.

Although yersiniosis is reportable in California, it is not a nationally reportable condition. However, the Foodborne Diseases Active Surveillance Network (FoodNet), a collaboration of CDC and other government entities with 10 state health departments in the U.S. (including Alameda, Berkeley, San Francisco, and Contra Costa health departments in California), conducts active, population-based surveillance of yersiniosis.¹¹

Epidemiology of Yersiniosis in California, 2013-2019

CDPH received reports of 1,362 total cases of yersiniosis with estimated symptom onset dates from 2013 through 2019. This corresponds to an average of 195 cases per year and an average annual incidence rate of 0.5 cases per 100,000 population. Incidence rates increased 300% during this surveillance period, from 0.2 per 100,000 (78 cases) in 2013 to 0.8 per 100,000 (326 cases) in 2019 [Figure 1]. Deaths were reported among 10 (0.7%) case-patients at the time of case report. Case fatality rates were greatest among case-patients aged 75 years and older (less than 0.1%).

There were 14 counties in which at least one case of yersiniosis occurred each year during 2013-2019: Alameda, Fresno, Los Angeles, Marin, Orange, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Luis Obispo, San Mateo, Santa Clara, and Ventura. Of these counties, Ventura (1.6 per 100,000; 97 cases) and San Mateo (1.0 per 100,000; 53 cases) had the highest average annual rates [Figure 2]. Overall, Los Angeles County had the highest number of cases (298 cases; 0.4 per 100,000). Of the 58 California counties, 34 (58.6%) had an average annual incidence rate that was above the national *Healthy People 2020* target rate for yersiniosis of 0.3 cases per 100,000 population.² By region (see *Technical Notes*), the Central Coast (0.9 per 100,000; 89 cases) and San Diego (0.8 per 100,000; 200 cases) regions had the highest average annual incidence rates.

During 2013-2019, the average annual incidence rate of yersiniosis was similar among females (0.5 per 100,000; 701 cases) and males (0.5 per 100,000; 652 cases); 51.8% of yersiniosis case-patients were female and 48.2% were male.

Average annual yersiniosis incidence rates during the surveillance period were highest among children aged less than 1 year (1.5 per 100,000; 52 cases) and adults aged 85 years and older (1.5 per 100,000; 78 cases), followed by adults aged 75 to 84 years (1.2 per 100,000; 132 cases) [Figure 3].

For yersiniosis cases with complete race/ethnicity information (see *Technical Notes*), the highest percentages of cases were among those who reported non-Hispanic White race/ethnicity (55.0%), which was disproportionately higher than the percentage of the non-Hispanic White racial/ethnic population in California during the same time period (55.0% vs. 38.0%, respectively) [Figure 4].

There were no foodborne outbreaks of yersiniosis during the surveillance period.

Figure 1. Yersiniosis Cases and Incidence Rates by Year of Estimated Illness Onset, California, 2013-2019

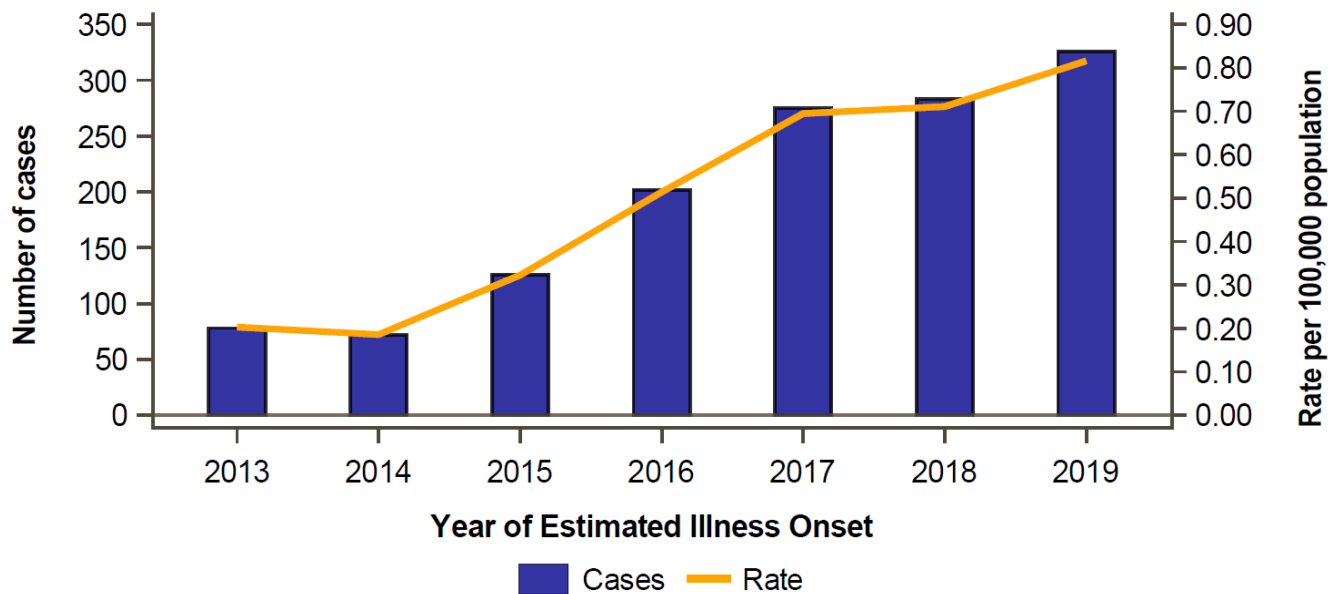


Figure 2. Yersiniosis Average Annual Incidence Rates by County, California, 2013-2019

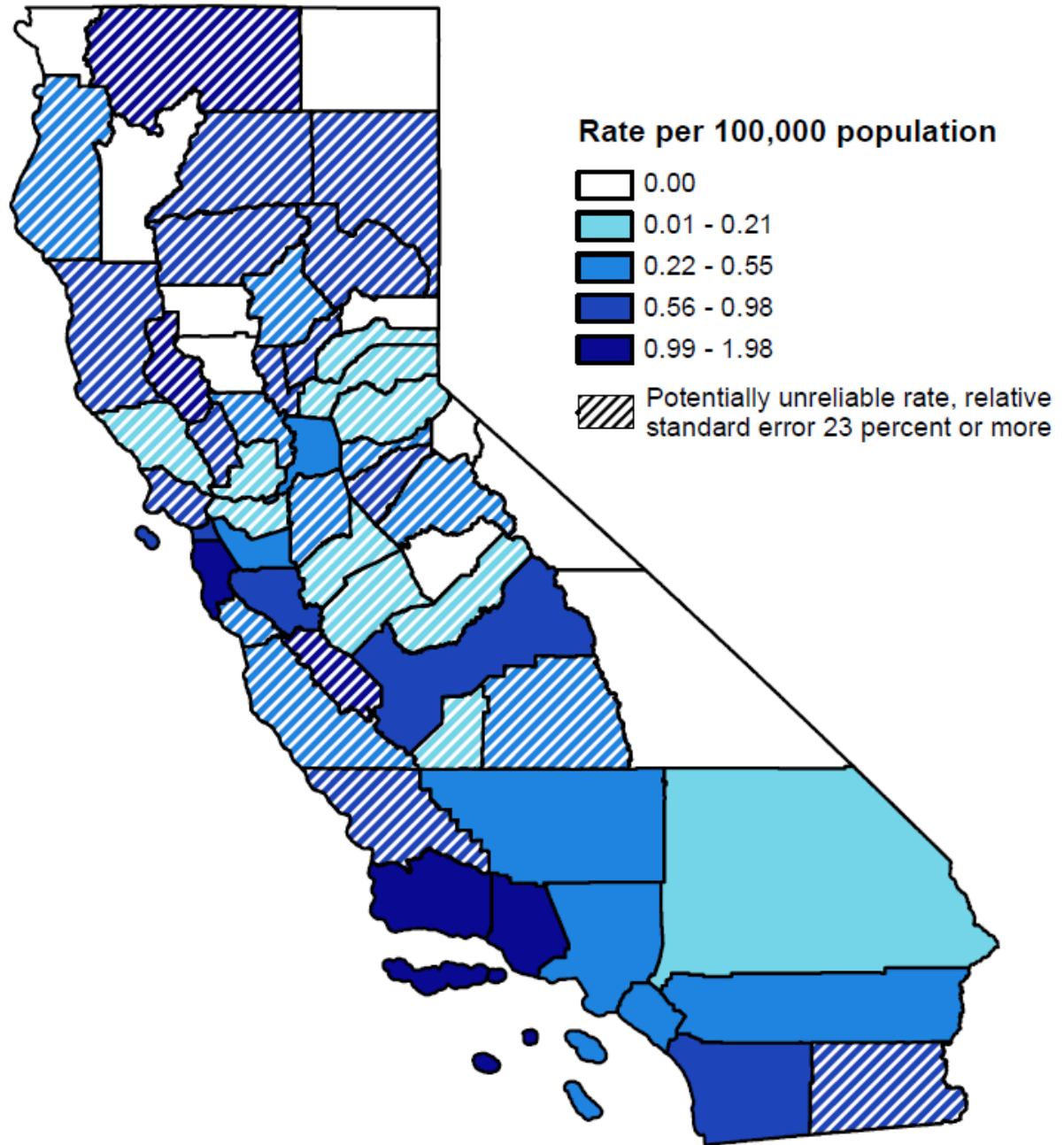


Figure 3. Yersiniosis Average Annual Incidence Rates by Age Group, California, 2013-2019

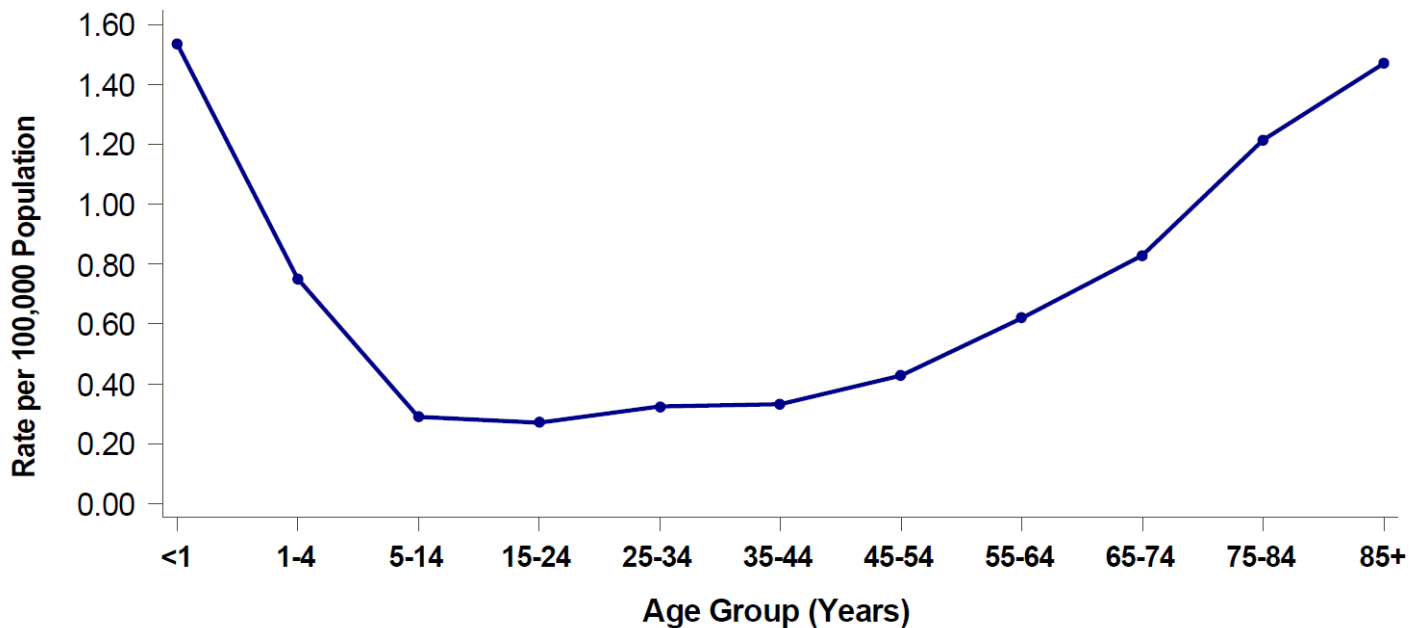
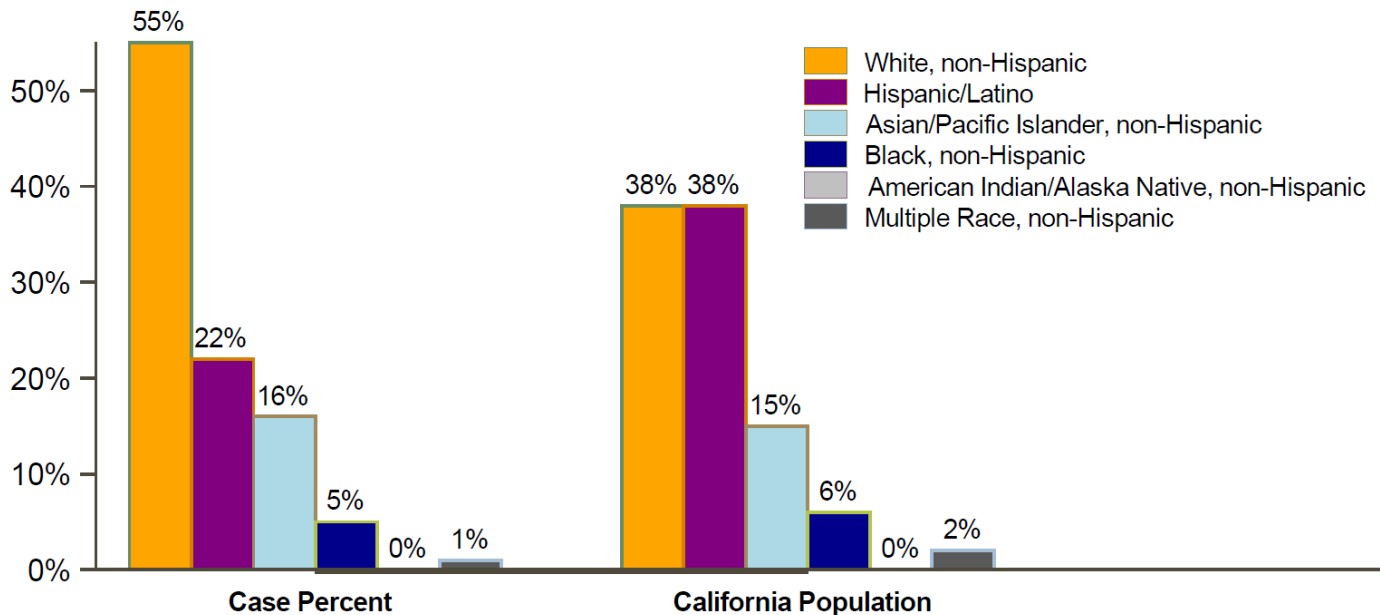


Figure 4. Yersiniosis Cases and Population by Race/Ethnicity, California, 2013-2019



30.8% (n=419) of reported incidents of Yersiniosis did not identify race/ethnicity and 2.8% (n=38) of incidents identified as 'Other' race/ethnicity and are not included in the Case Percent calculation. Information presented with a large percentage of missing data should be interpreted with caution.

Comments

Although there was a 3-fold increase in yersiniosis incidence rates in California from 2013 through 2019, yersiniosis remains relatively uncommon in California; the peak rate in 2019 was less than 1 case per 100,000 population. However, it is estimated that only 1 of every 123 people who are infected with *Yersinia* seek medical care and are diagnosed with yersiniosis; therefore, the true infection rates are likely to be much higher.¹² For each year in California beginning in 2015, the state-wide incidence rate was above the national *Healthy People 2020* target rate for yersiniosis of 0.3 cases per 100,000 population.

The overall yersiniosis incidence rate in 2019 for FoodNet sites in the U.S. was 1.4 per 100,000 population, which was a 2.6-fold increase since 2013, comparable to the increase in California.¹³ Also, the age distribution of yersiniosis case-patients living in FoodNet sites and California was similar; incidence rates were highest among very young children and older adults.¹⁴ Similar to FoodNet sites, the increase in incidence in California may be due in part to the increased use of CIDT methods and a more inclusive probable case definition of yersiniosis.¹³

To reduce the risk of yersiniosis, persons should be educated regarding the risks of consuming raw and undercooked pork. In addition, proper handwashing after contact with raw pork products, pigs, and environments where pigs are present is key to preventing the transmission of *Yersinia*. Persons handling any raw pork product should not have contact with children while preparing the food, and [follow food safety guidelines](#) when preparing food, especially by keeping raw pork away from ready-to-eat foods and cooking food to the right temperature. In addition, persons should drink and eat only pasteurized milk or dairy products and avoid drinking untreated water.¹⁵ Animal feces should be disposed of in a sanitary manner.

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References

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⁵ [Yersinia enterocolitica \(Yersiniosis\), Symptoms. U.S. Centers for Disease Control and Prevention website.](#) Updated May 26, 2016. Accessed May 11, 2021.

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⁶ [Yersinia enterocolitica \(Yersiniosis\), Information for Health & Lab Professionals.](#) U.S. Centers for Disease Control and Prevention website. Updated May 25, 2016. Accessed May 15, 2021.

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⁸ [Reportable Diseases and Conditions: Reporting to the Local Health Authority, 17 CCR § 2500 \(2021\).](#)

<https://govt.westlaw.com/calregs/Document/I5849DB60A9CD11E0AE80D7A8DD0B623B>

⁹ [Reportable Diseases and Conditions: Notification by Laboratories, 17 CCR § 2505 \(2021\).](#)

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