

Key Findings

Cryptosporidiosis is an infectious disease caused by *Cryptosporidium* parasites that can infect people and animals and cause watery diarrhea. These parasites can be found in soil, food, and water and on surfaces that have been contaminated by the feces (stool or poop) of infected people or animals. People can get cryptosporidiosis by accidentally swallowing parasites in water while enjoying recreational water (for example, swimming pools or lakes), by drinking or eating contaminated water or food, or through contact with an infected person's stool. Cryptosporidiosis can make anyone sick, but young children, pregnant women, and people with weakened immune systems are more likely to get sick and dehydrated if they are infected.

Cryptosporidiosis in California from 2013 through 2019

Total Cases: There were a total of 3,558 new cryptosporidiosis cases from 2013 through 2019.

Rate: The average annual rate of new cryptosporidiosis cases during 2013-2019 was about 1 case per 100,000 people in California. The annual rate more than doubled from 2013 (about 1 case per 100,000 people) through 2019 (about 2 cases per 100,000 people).

- **By County:** The average rate was highest in Inyo County (about 15 cases per 100,000 people), followed by Butte County (about 7 cases per 100,000 people), and Marin County (about 6 cases per 100,000 people).
- **By Sex:** The average rate was slightly higher in males than in females, each group with about 1 case per 100,000 people.
- **By Age Group:** The average rates were highest in adults aged 25 to 34 years and children aged 1 to 4 years (about 2 cases per 100,000 people in both age groups).
- **By Race/Ethnicity:** For cases where race and ethnicity information was available, the highest percentage of cases was among people who reported non-Hispanic White race/ethnicity (about 56%).
- **By Month:** There were more cases of cryptosporidiosis in July and August (about 453 cases each month) than in all other months (about 265 cases each month).

To help prevent accidentally swallowing parasites and getting cryptosporidiosis, do not drink untreated water from lakes, streams, ponds, or shallow wells. If swimming at a pool, lake, or other recreational water area, do not swallow the water, and do not swim or let kids swim if sick with diarrhea. Remember to always wash hands with soap and water after using the toilet or caring for someone with diarrhea.

For more information about cryptosporidiosis in California, please visit the [CDPH Cryptosporidiosis webpage](#). For details about key infectious diseases in California, please visit the [CDPH Surveillance and Statistics Section webpage](#).

Background

Cryptosporidiosis is a worldwide diarrheal disease caused by intestinal infection with the microscopic parasite *Cryptosporidium*. Cryptosporidia live in the intestines of infected humans and animals and are shed prolifically in feces, where they can contaminate water, food, soil, and surfaces; accidental ingestion of as few as 10 *Cryptosporidium* oocysts can cause infection.¹ The U.S. Centers for Disease Control and Prevention (CDC) has estimated that *Cryptosporidium* species cause 748,000 infections per year in the U.S.^{2, 3} In the U.S., cryptosporidiosis is the most frequently recognized cause of disease and outbreak associated with water among humans and is a recognized cause of drinking water, recreational water, and foodborne-associated outbreaks.^{1, 4, 5} Leading causes of *Cryptosporidium* infection include ingestion of untreated drinking water, recreational water, or contaminated food, contact with infected livestock, international travel to endemic areas, and contact with infected persons, including exposure through sexual contact.¹ Accidental swallowing or intentional drinking of recreational water (e.g., swimming pools and lakes) are particularly important pathways for infection as *Cryptosporidium* is resistant to many chemical disinfectants including chlorine.⁵ Asymptomatic infections in people and animals are also a frequent source of *Cryptosporidium* transmission.²

Symptoms of cryptosporidiosis include watery diarrhea, stomach cramps, nausea, vomiting, and dehydration, which can lead to weight loss; some infections are asymptomatic. Symptomatic illness usually begins 2-10 days after exposure and can last 1-2 weeks. Shedding of the parasite in the stool can last weeks after symptoms subside, contributing to further transmission.⁶ Groups at risk for severe illness include young children, pregnant women, and immunocompromised persons. Persons with weakened immune systems may develop serious, chronic, and sometimes fatal illness; infected immunocompromised persons may also be carriers of *Cryptosporidium* but have no symptoms.⁶

Because routine stool testing for ova and parasites does not normally include techniques necessary to detect *Cryptosporidium*, health care providers should specifically request testing in suspect cases. Molecular techniques (e.g., polymerase chain reaction – PCR) including multiplex PCR assays are also available, sensitive, and commonly used to detect cryptosporidia.⁷ However, molecular techniques are not able to distinguish between viable and non-viable organisms, and detection by PCR does not always indicate active disease. Infected persons can shed Cryptosporidia irregularly in their stool, so multiple stool samples should be collected and tested to accurately diagnose and detect cryptosporidiosis.⁸ Most persons with healthy immune systems will recover without specific treatment, although symptom management, hydration, and treatment of diarrhea may be recommended. Treatment in HIV-positive patients may include anti-retroviral therapy to improve immune status.⁹

This report describes the epidemiology of confirmed and probable cryptosporidiosis 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*.¹⁰ The epidemiologic description of cryptosporidiosis for earlier surveillance periods can be found in the *Epidemiologic Summary of Cryptosporidiosis in California, 2001-2008 and 2009-2012*.^{11, 12}

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 cryptosporidiosis to their local health department within one working day of identification or immediately by telephone if an outbreak is suspected.¹³ Per CCR, Title 17, Section 2505, laboratories are also required to report laboratory testing results suggestive of *Cryptosporidium* 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.¹⁴

California regulations require cases of cryptosporidiosis to be reported to the California Department of Public Health (CDPH). CDPH counted cases that satisfied the CDC/Council of State and Territorial Epidemiologists 2012 surveillance case definition of a confirmed or probable case. During the surveillance period (2013-2019), a confirmed case of cryptosporidiosis was defined as a diagnosis of *Cryptosporidium* spp. infection based on evidence of *Cryptosporidium* organisms or DNA in stool, intestinal fluid, tissue samples, biopsy specimens, or other biological sample by certain laboratory methods with a high positive predictive value (e.g., direct fluorescent antibody [DFA] test, PCR, enzyme immunoassay [EIA], OR light microscopy of stained specimens). A probable case of cryptosporidiosis was defined as a diagnosis of *Cryptosporidium* spp. infection determined only by antigen screening test method, such as immunochromatographic card/rapid card test; or a laboratory test of unknown method; OR by gastrointestinal illness characterized by diarrhea and one or more of the following: diarrhea duration of 72 hours or more, abdominal cramping, vomiting, or anorexia that is epidemiologically linked to a confirmed case of *Cryptosporidium* spp. infection.¹⁵

Epidemiology of Cryptosporidiosis in California, 2013-2019

CDPH received reports of 3,558 total cases of cryptosporidiosis with estimated symptom onset dates from 2013 through 2019. The average annual incidence of cryptosporidiosis during 2013-2019 was 1.3 per 100,000 population. Incidence rates increased by 138% from 2013 (0.8 per 100,000; 307 cases) through 2019 (1.9 per 100,000; 747 cases) [Figure 1].

Statewide from 2013 through 2019, 24 California counties reported at least 1 case of cryptosporidiosis for each year of the surveillance period. County-specific average annual incidence rates per 100,000 population ranged from 0 to 15.4, with the highest average annual rates in Inyo County (15.4 per 100,000; 20 cases), Butte County (6.8 per 100,000; 106 cases), and Marin County (5.8 per 100,000; 106 cases) [Figure 2]. By region (see *Technical Notes*), the average annual incidence rate for the surveillance period was higher in Northern California (1.9 cases per 100,000; 1,830 cases) than in Southern California (1.0 per 100,000; 1,728 cases).

From 2013 through 2019, the average annual incidence rate was higher among males (1.4 per 100,000; 1,975 cases) than among females (1.1 per 100,000; 1,548 cases); 56.1% of cryptosporidiosis case-patients were male and 43.9% were female.

By age group, average annual incidence rates were highest among adults aged 25-34 years (1.9 cases per 100,000; 704 cases) and children aged 1-4 years (1.5 cases per 100,000; 210 cases) [Figure 3].

For the 2,397 cryptosporidiosis cases with complete race/ethnicity information, the highest percentage of cases was among those who reported non-Hispanic White race/ethnicity (55.9%). Cases reported non-Hispanic White race/ethnicity more frequently and non-Hispanic Asian/Pacific Islander race/ethnicity less frequently than would be expected compared to the percentage of these groups in California during the same time period (55.9% vs. 38.0%, respectively, for non-Hispanic White race/ethnicity; 6.3% vs. 14.8%, respectively, for non-Hispanic Asian/Pacific Islander race/ethnicity) [Figure 4].

By month, the highest number of cases occurred in July and August [Figure 5]. During 2013-2019, 25.5% (906) of all cryptosporidiosis cases had estimated symptom onsets during July and August, an average of 453 cases each month. In comparison, an average of 265 cases occurred each month during September through June.

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

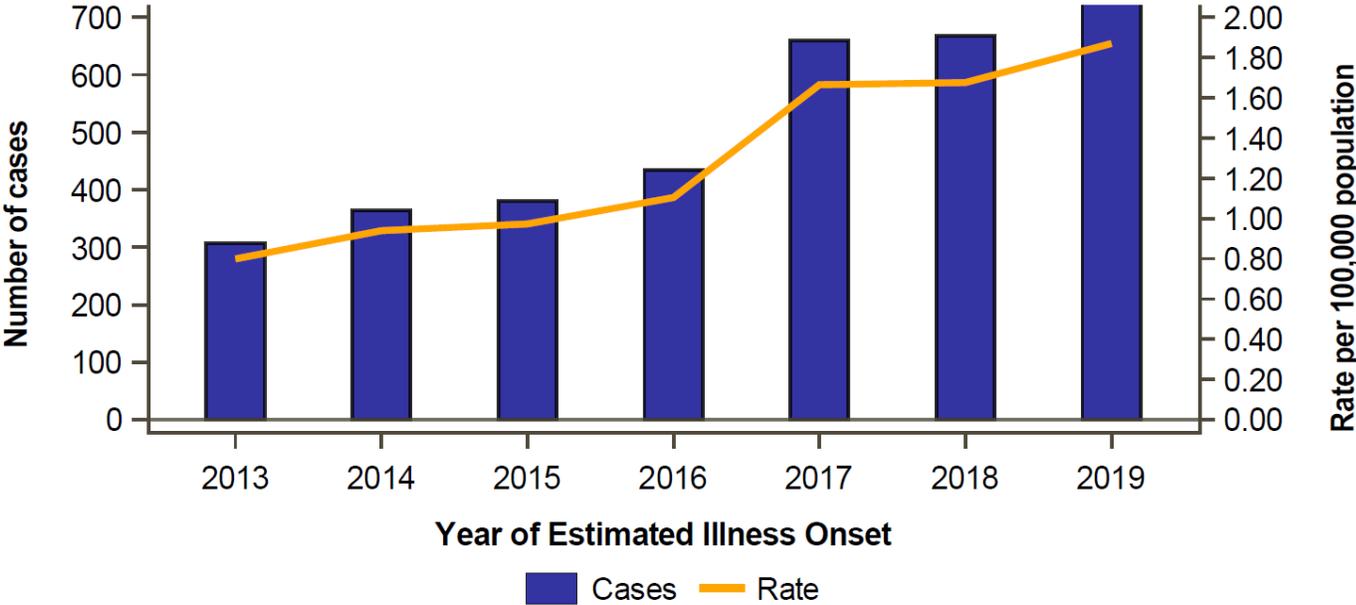


Figure 3. Cryptosporidiosis Incidence Rates by Age Group and Year of Estimated Illness Onset, California, 2013-2019

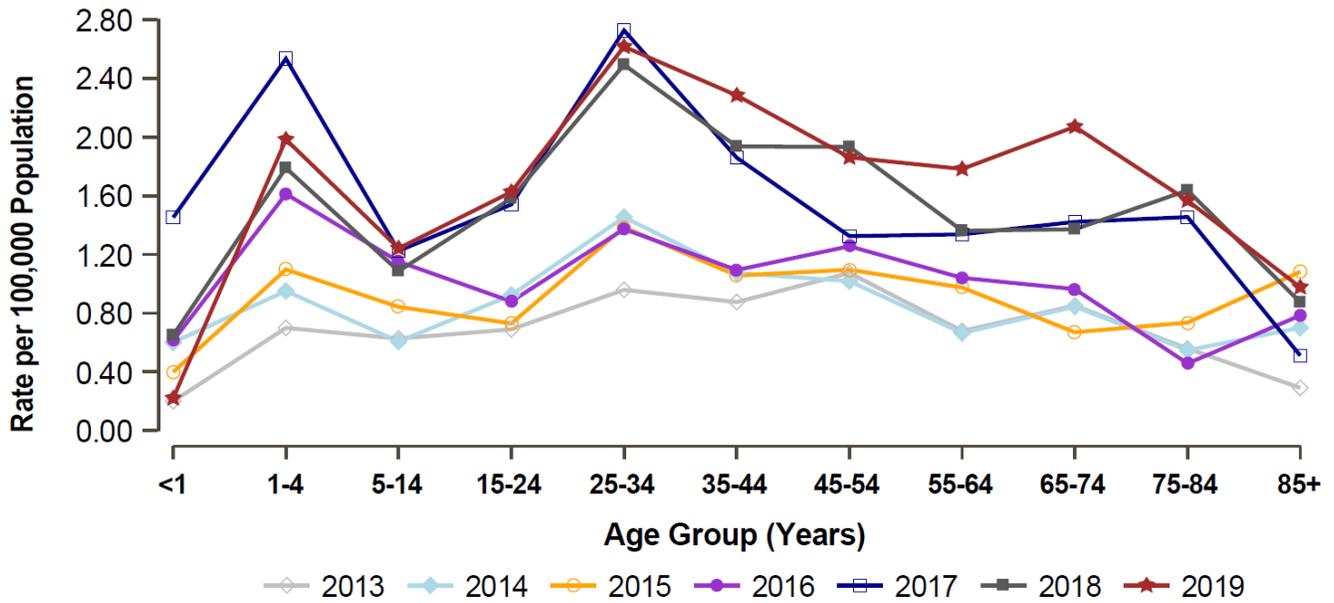
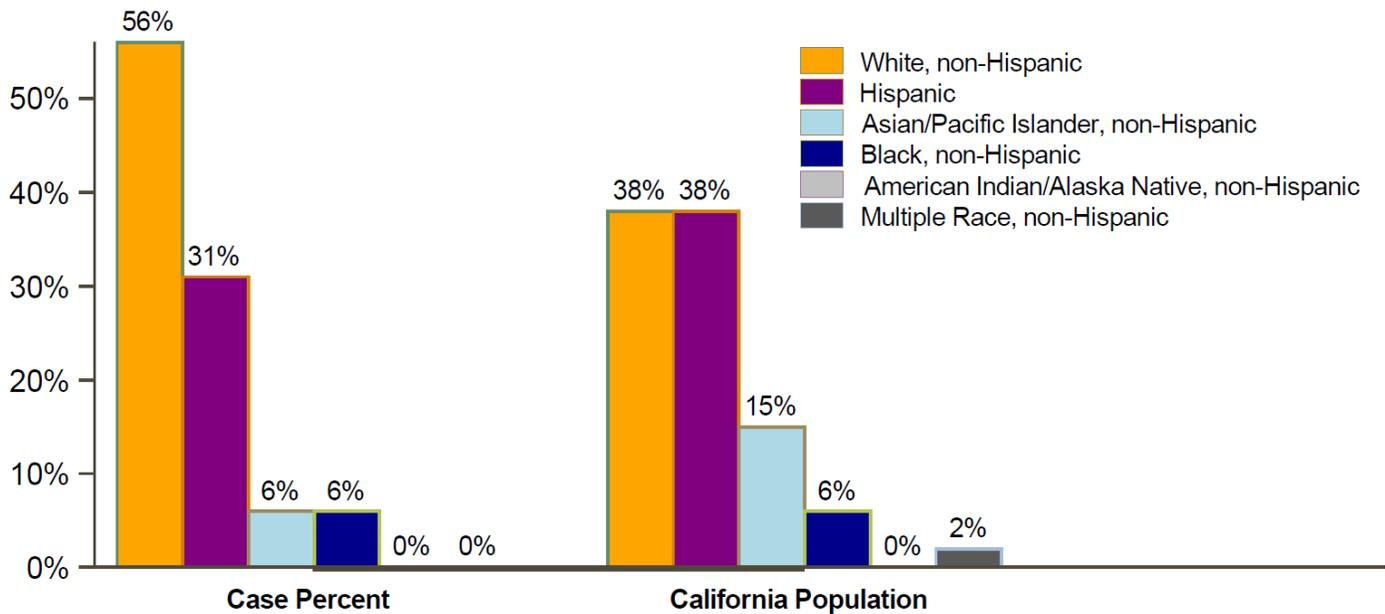
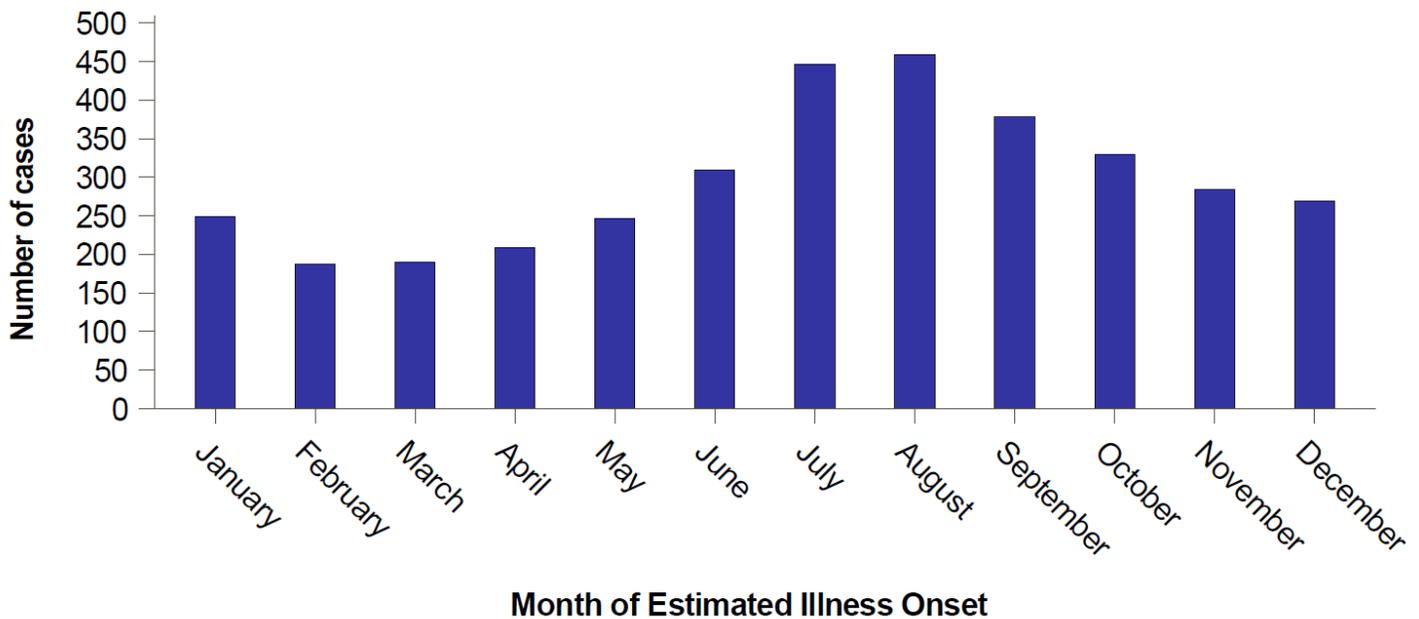


Figure 4. Cryptosporidiosis Cases and Population by Race/Ethnicity, California, 2013-2019



28.5% (n=1014) of reported incidents of Cryptosporidiosis did not identify race/ethnicity and 4.1% (n=147) 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.

Figure 5. Cryptosporidiosis Cases by Month of Estimated Illness Onset, California, 2013-2019



Comments

Incidence of cryptosporidiosis per 100,000 population in California increased by 138% from 2013 (0.8 per 100,000; 307 cases) through 2019 (1.9 per 100,000; 747 cases).

Overall, incidence rates increased slightly during the 2013-2019 surveillance period (average annual rate of 1.3 per 100,000 population) compared to the 2009-2012 surveillance period (average annual rate of 1.0 per 100,000 population) as described in previous epidemiologic summaries.¹² The race/ethnicity, sex, seasonality, and regional epidemiologic profiles of incident cases were similar to those reported in epidemiologic summaries from earlier years.^{11, 12}

Cryptosporidium presents special challenges to public health because of its low infectious dose combined with its resistance to chlorine disinfection. Decreasing human or animal fecal contamination of recreational or drinking water, education regarding hand hygiene and safe sexual practices, and targeted education of high-risk groups likely offer the best opportunities for reducing cryptosporidiosis.

To prevent cryptosporidiosis, persons should not drink untreated water from lakes, streams, ponds, or shallow wells. Additionally, persons swimming in recreational water areas should avoid swallowing recreational water and should prohibit children with diarrhea from swimming. Thorough handwashing with soap and water after using the toilet or caring for an individual with diarrhea can also help mitigate the spread of cryptosporidiosis.

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