Epidemiologic Summary of Tularemia in California, 2013 - 2019

Key Findings

Tularemia is a disease caused by bacteria called *Francisella tularensis* that can infect people and animals. Tularemia is uncommon in California, but people can get tularemia in different ways, including through the bite of infected ticks, or by touching, handling, or eating meat from infected animals. Tularemia can cause severe illness and death.

Tularemia in California from 2013 through 2019

Total Cases: There were a total of 19 new tularemia cases from 2013 through 2019, with 0 to 5 cases reported per year.

- **By County**: Cases of tularemia were reported from 14 counties in California. More than one case was reported from Alameda County (3 cases), Lake County (3 cases), and Monterey County (2 cases).
- **By Sex**: About the same number of cases were reported in males (10 cases) and females (9 cases).
- **By Age Group**: More cases were reported in people aged 5 to 14 years (7 cases) and 65 to 74 years (5 cases) than in other age groups.
- **By Race/Ethnicity**: More cases were in people who reported non-Hispanic White race/ethnicity (9 cases) or Hispanic/Latino race/ethnicity (4 cases) than in other reported races/ethnicities.

To help prevent tularemia, people should not touch or handle dead, wild animals with their bare hands. Hunters and people who process wild game meat should wear gloves while handling wild animal meat. Any meat should be thoroughly cooked before it is eaten. When outdoors in areas where ticks are common, people should wear clothing that covers the arms and legs, use insect repellent to keep ticks from biting, and check their clothes and skin frequently to promptly remove any ticks.

For more information about tularemia in California, please visit the CDPH Tularemia webpage. For details about key infectious diseases in California, please visit the CDPH Surveillance and Statistics Section webpage.

Background

The bacterium that causes tularemia, *Francisella tularensis*, is highly infectious and can enter the human body through the eyes, mouth, lungs, or breaks in the skin. Most commonly, people acquire tularemia through direct contact with tissue of infected wild animals, usually rabbits. Tularemia can also be transmitted through the bite of certain ticks and flies including, in California, the Pacific coast tick (*Dermacentor occidentalis*), the American dog tick (*Dermacentor variabilis*), and deerflies *(Chrysops discalis*). People may also be infected through contact with contaminated water or breathing air in which tularemia organisms have become aerosolized. Rarely, humans can get tularemia if they eat undercooked meat from an infected animal.[1]

Symptoms of tularemia in humans vary depending on the route of entry. The most common clinical forms of tularemia are ulceroglandular, glandular, oculoglandular, oropharyngeal, pneumonic, and typhoidal.[2] In addition to localized manifestations, including conjunctivitis, skin ulcers, and swollen lymph nodes, symptoms may also include chills, fever, headache, generalized body ache, cough, and pain or tightness in the chest, which may appear three to five days after infection. If not treated, tularemia bacteria can spread to other parts of the body and cause a blood infection or meningitis. There are effective antibiotics to treat patients with tularemia, and tularemia is not transmitted from person to person.[1]

This report describes the epidemiology of confirmed and probable tularemia cases in California from 2013 through 2019. Case data in this report are based on surveillance data and should be considered estimates of true disease incidence. For a complete discussion of the definitions, methods, and limitations associated with this report, please refer to the *Technical Notes*.[3]

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 tularemia to their local health department immediately by telephone.[4] Per CCR, Title 17, Section 2505, laboratories are also required to report laboratory testing results suggestive of tularemia to the local health department; reporting must occur within one hour after the health care provider has been notified.[5]

California regulations require cases of tularemia to be reported to the California Department of Public Health (CDPH). CDPH counted cases that satisfied the U.S. Centers for Disease Control and Prevention/Council of State and Territorial Epidemiologists surveillance case definition of a confirmed or probable case. During the surveillance period (2013-2019) a confirmed case was defined as one with clinically-compatible illness and at least one of the following confirmatory laboratory results: isolation of *F. tularensis* in a clinical or autopsy specimen, or a fourfold or greater change in serum antibody titer to *F. tularensis* antigen. Clinically compatible illness includes the following:

- Ulceroglandular: cutaneous ulcer with regional lymphadenopathy
- Glandular: regional lymphadenopathy with no ulcer
- Oculoglandular: conjunctivitis with preauricular lymphadenopathy

- Oropharyngeal: stomatitis or pharyngitis or tonsillitis and cervical lymphadenopathy
- Pneumonic: primary pulmonary disease
- Typhoidal: febrile illness without localizing signs and symptoms

From 2013-2016, a probable tularemia case was defined as a one with clinically-compatible illness and at least one of the following presumptive laboratory results: elevated serum antibody titer(s) to *F. tularensis* antigen (without a documented fourfold or greater change) in a patient with no history of tularemia vaccination, or detection of *F. tularensis* in a clinical or autopsy specimen by fluorescent assay. Beginning in 2017, presumptive laboratory evidence also included detection of *F. tularensis* in a clinical or autopsy specimen by a polymerase chain reaction (PCR).[6]

Epidemiology of Tularemia in California, 2013-2019

CDPH received reports of 19 total cases of tularemia with estimated symptom onset dates from 2013 through 2019. In years with reported tularemia cases, the highest number of cases was reported in 2017 (5 cases), and the fewest number was reported in 2013, 2015, and 2016 (2 cases each year). No cases were reported in 2014 [Figure 1].

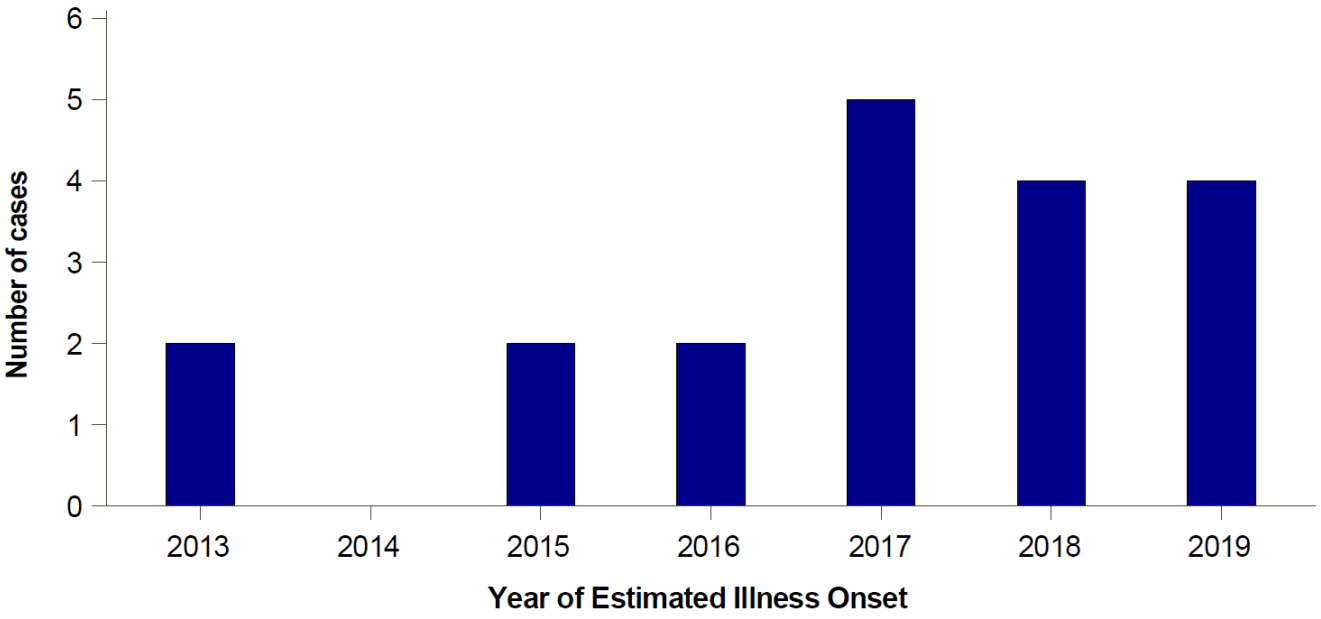
During the surveillance period, cases were reported from 14 California counties, with more than one case reported from Alameda (3 cases), Lake (3), and Monterey (2) counties. By region (see *Technical Notes*), more cases of tularemia were reported in Northern California (18 cases) than in Southern California (1), and the plurality of cases were reported in the Far North (7). No cases of tularemia were reported in the Inland Empire, San Diego, or Sierra regions.

Cases of tularemia were reported equally frequently among males (10 cases) and females (9). By age group, case-patients were aged 5-14 years (7 cases), 15-24 years (1), 45-54 years (3), 55-64 years (1), 65-74 years (5), and 85 years and older (2). No cases were reported among those younger than 5 years, between the ages of 25 and 44 years, and between the ages of 75 and 84 years. By race/ethnicity, case-patients reported non-Hispanic White race/ethnicity (9 cases) or Hispanic/Latino race/ethnicity (4) more frequently than other reported racial/ethnic groups.

Information on symptoms was reported for all 19 case-patients. Symptoms reported included: fever (17 case-patients), lymphadenopathy (11), abdominal pain (7), skin lesion (6), cutaneous ulcer (5), pharyngitis (5), vomiting (5), cough (4), sepsis (3), stomatitis (3), diarrhea (3), conjunctivitis (2), pleuropneumonia (1), and tonsillitis (1). Thirteen patients were hospitalized, and no deaths were reported.

Fifteen (79%) case-patients reported engaging in outdoor occupational or recreational activities in the three weeks preceding onset of illness, including hiking and camping (9 case-patients), farming and ranching (6), gardening and landscaping (6), and hunting and fishing (2). Seven patients reported contact with wild animals including rabbits (2 patients), rodents (3), and other species (4). Eight patients reported a known tick bite or other contact with ticks, and one patient reported known deerfly contact. One patient, an organ transplant recipient, was infected via kidney transplant from a donor later diagnosed with tularemia.[7] Three California patients likely became infected while traveling in other states.

Figure 1. Tularemia Cases by Year of Estimated Illness Onset, California, 2013-2019



Comments

Due to low case counts for tularemia in California from 2013 through 2019, incidence rates were excluded from this report. When the numbers of cases used to compute rates are small, those rates tend to have poor reliability.[3]

To prevent tularemia, persons should avoid bare-handed contact with carcasses or tissues from dead, wild animals. Wild animal meat should be cooked thoroughly before being eaten. When outdoors in areas where ticks are common, persons should wear protective clothing that covers the arms and legs, use insect repellent, and examine clothes and skin frequently to identify and promptly remove any ticks.

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References

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