Vaccine-Preventable Disease Surveillance in California

2014 Annual Report

California Department of Public Health

Center for Infectious Diseases

Division of Communicable Disease Control

Immunization Branch

Vaccine-Preventable Diseases Epidemiology Section

Edmund G. Brown Jr., Governor
State of California

Diana S. Dooley, Secretary
California Health and Human Services Agency

Karen L. Smith, MD, MPH, Director and State Health Officer
California Department of Public Health

Vaccine-Preventable Disease Surveillance in California

Persons using assistive technology may not be able to fully access all of the data tables in this report. Accessible versions of report tables are available on the Immunization Branch Disease Info and Reports Webpage.

Table of Contents

ACKNOWLEDGEMENTS

We are grateful to California local health jurisdiction (LHJ) staff for their continued support and tireless efforts in communicable disease surveillance and outbreak investigation. We also thank the healthcare providers and laboratorians who diligently reported case information to their LHDs.

PROGRAM OVERVIEW

The Immunization Branch of the California Department of Public Health (CDPH) is responsible for collecting surveillance data on vaccine-preventable diseases (VPDs) for the purposes of determining disease impact, assessing trends in disease occurrence, characterizing affected populations, prioritizing control efforts, and evaluating prevention strategies in California.

VACCINE-PREVENTABLE DISEASE SUMMARIES

Title 17 of the California Code of Regulations (CCR) (Sections 2500, 2505, 2593, 2641-2643, 2800-2812) requires healthcare providers and laboratories to report known or suspected cases of specified communicable diseases and conditions to the local health officer. Local health jurisdictions (LHJs) in turn report cases to CDPH, and CDPH reports cases to the Centers for Disease Control and Prevention (CDC). Provisions of the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule allow for the disclosure of patient health information without patient authorization for public health activities and purposes (e.g., routine disease reporting). Prompt reporting allows outbreaks to be recognized when control measures are most likely to be effective in preventing additional cases.

In this report, we describe the epidemiology of the following reportable VPDs in California: diphtheria, invasive *Haemophilus influenzae* disease, hepatitis A, hepatitis B, measles, meningococcal disease, mumps, pertussis, poliovirus infection, rubella, tetanus, and varicella. Vaccine-preventable conditions such as zoster, rotavirus gastroenteritis, human papillomavirus (HPV) infection, and invasive pneumococcal disease (other than pneumococcal meningitis) are not currently reportable under State reporting regulations.

Unless otherwise noted, the data in this summary are final annual totals for reported cases of VPDs, as prepared by the CDPH Immunization Branch. Case rates were calculated using population estimates provided by the California Department of Finance (DOF) Demographic Research Unit. Surveillance case definitions were adapted from position statements published by the Council of State and Territorial Epidemiologists (CSTE).

Last updated on April 19, 2017

Diphtheria

Background

Corynebacterium diphtheriae is an aerobic gram-positive bacillus. Only toxigenic strains can cause severe disease. Toxin production occurs only when the bacillus is itself infected by a specific virus carrying the genetic information for the toxin. The toxin inhibits cellular protein synthesis and is responsible for local tissue destruction and membrane formation. The toxin produced at the site of the membrane is absorbed into the bloodstream and then distributed to the tissues of the body. Respiratory tract diphtheria usually occurs as membranous nasopharyngitis or obstructive laryngotracheitis. The toxin is responsible for the major complications of myocarditis and neuritis.

C. diphtheriae is spread by respiratory tract droplets and by contact with discharges from skin lesions. Susceptible persons may acquire toxigenic diphtheria bacilli in the nasopharynx. The incubation period of diphtheria is 2–5 days (range, 1–10 days).

Epidemiology

In the 1920s in the United States, 100,000–200,000 cases of diphtheria and 13,000–15,000 deaths were reported each year. The number of cases gradually declined to about 19,000 cases in 1945 and declined more rapidly in the late 1940s with the widespread use of diphtheria toxoid. Diphtheria toxoid was developed around 1921 but was not widely used until the early 1930s. It was incorporated with tetanus toxoid and pertussis vaccine and became routinely used in the 1940s. After a primary series of three diphtheria toxoid doses in adults or four doses in infants, a protective level of antitoxin is reached in more than 95% of people. Booster doses are recommended every 10 years.

Respiratory diphtheria is now extraordinarily rare in the United States and most patients identified in the U.S. with diphtheria in recent years were exposed to *C. diphtheriae* in parts of the world where it is still endemic (Table 1). The last reported case in the U.S. was in New York State in 2012. The last case prior to that was in 2003 in a traveler returned to Pennsylvania from Haiti. However, *C. diphtheriae* may continue to circulate in areas of the U.S. with previously endemic diphtheria. In 1996, 10 isolates of *C. diphtheria,* eight of which were toxigenic, were obtained from persons in a Native American community in South Dakota. None of the infected persons had classic diphtheria disease, although five had either pharyngitis or tonsillitis.

Table 1. Countries with endemic diphtheria

Region	Countries
Africa	Algeria, Angola, Egypt, Eritrea, Ethiopia, Guinea, Niger, Nigeria, Sudan, Zambia, and other sub-Saharan countries
Americas	Bolivia, Brazil, Colombia, Dominican Republic, Ecuador, Haiti, and Paraguay
Asia/South Pacific	Bangladesh, Bhutan, Burma (Myanmar), Cambodia, China, India, Indonesia, Laos, Malaysia, Mongolia, Nepal, Pakistan, Papua New Guinea, Philippines, Thailand, and Vietnam
Middle East	Afghanistan, Iran, Iraq, Saudi Arabia, Syria, Turkey, and Yemen
Eastern Europe (including some countries in Asia)	Albania, Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan

Surveillance Case Definition (2010)

California healthcare providers and laboratories are required to report known or suspected cases of diphtheria to the LHJ, in accordance with Title 17 of the California Code of Regulations. The LHJs report all probable and confirmed diphtheria cases to CDPH using the following case definition:

Case Classification

Probable:
In the absence of a more likely diagnosis, an upper respiratory tract illness with:

- An adherent membrane of the nose, pharynx, tonsils, or larynx; AND
- Absence of laboratory confirmation; AND
- Lack of epidemiologic linkage to a laboratory-confirmed case of diphtheria.

Confirmed:
An upper respiratory tract illness with an adherent membrane of the nose, pharynx, tonsils, or larynx; and any of the following:

- Isolation of *Corynebacterium diphtheriae* from the nose or throat; OR
- Histopathologic diagnosis of diphtheria; OR
- Epidemiologic linkage to a laboratory-confirmed case of diphtheria.

Epidemiologic Summary

No cases of diphtheria were reported in California in 2014.

Only three cases of diphtheria have been reported in California since 1994. The most recent case was reported in 2002.

For more information about diphtheria, please visit the CDPH Diphtheria Webpage (http://www.cdph.ca.gov/HEALTHINFO/DISCOND/Pages/Diphtheria.aspx).

Haemophilus influenzae Disease

Background

The bacterium *Haemophilus influenzae* can be isolated in six encapsulated forms (types a-f) and also in unencapsulated forms. Invasive *H. influenzae* disease includes pneumonia, bacteremia, meningitis, epiglottitis, and septic arthritis. Both type b and non-type b encapsulated strains (a, c-f) can cause similar disease, but only type b is vaccine-preventable. The polysaccharide capsule is an important virulence factor; unencapsulated or "nontypeable" strains typically do not cause invasive disease. Pharyngeal colonization with *H. influenzae* is relatively common, especially with unencapsulated strains and non-b capsular strains.

Epidemiology

Before effective *Haemophilus influenzae* type b (Hib) vaccines were introduced in 1987, one in 200 children developed invasive Hib disease by the age of 5 years. Sixty percent of these children had meningitis; 3%-6% died. Virtually all invasive disease in the prevaccine era was due to capsular type b, and Hib was the most common cause of bacterial meningitis. Since the introduction of Hib conjugate vaccines in the U.S., the incidence of invasive Hib disease has declined by 99%. Invasive Hib disease in the U.S. today occurs primarily in underimmunized children and among infants too young to have completed the primary vaccination series. The majority of invasive *H. influenzae* cases reported in children in recent years have been caused by non-type b strains.

Surveillance Case Definition (2010)

California healthcare providers and laboratories are required to report known or suspected cases of invasive *Haemophilus influenzae* disease caused by all serotypes in persons <15 years of age to the LHJ, in accordance with Title 17 of the California Code of Regulations. The LHJs report all probable and confirmed invasive *Haemophilus influenzae* cases <15 years of age to CDPH using the following case definition:

Clinical Description

Invasive disease may be manifest as pneumonia, bacteremia, meningitis, epiglottitis, septic arthritis, cellulitis, or purulent pericarditis; less common infections include endocarditis and osteomyelitis.

Case Classification

Probable:

Meningitis with detection of *Haemophilus influenzae* type b antigen in cerebrospinal fluid (CSF)

Confirmed:

- Isolation of *Haemophilus influenzae* from a normally sterile body site (e.g., blood or CSF, or, less commonly, joint, pleural, or pericardial fluid)

Epidemiologic Summary

In 2014, a total of 40 invasive *Haemophilus influenzae* disease cases in persons <15 years of age were reported statewide (Table 2). Of the 40 cases, 1 (3%) was fatal. The fatality occurred in an infant <12 months of age. Serotyping was attempted on 37 (93%) isolates and none were identified as Hib (Table 3).

Of the 37 isolates that were serotyped, 8 (22%) were serotype a, 4 (11%) were serotype f, 4 (11%) were identified only as other [a, c-f (non-b)], and 21 (57%) were nontypeable. The isolate for the fatal case-patient was non-typeable. No cases of Hib in children <15 years of age have been reported in California since 2011.

For more information about *Haemophilus influenzae* type b (Hib), please visit the CDPH *Haemophilus Influenzae* type b (Hib) Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/HaemophilusInfluenzaetypeb(Hib).aspx).

Table 2. Invasive *Haemophilus influenzae* disease cases <15 years of age of all serotypes by local health jurisdiction – California, 2013–2014

	2013	2014
CALIFORNIA	46	40
Alameda*	1	2
City of Berkeley*	0	0
Alpine	0	0
Amador	0	0
Butte	0	1
Calaveras	0	0
Colusa	0	0
Contra Costa	0	0
Del Norte	0	0
El Dorado	0	1
Fresno	6	3
Glenn	0	0
Humboldt	0	0
Imperial	0	0
Inyo	0	0
Kern	1	1
Kings	0	0
Lake	0	0
Lassen	0	0
Los Angeles*	12	8
City of Long Beach*	0	2
City of Pasadena*	0	0
Madera	0	0
Marin	1	0
Mariposa	0	0
Mendocino	0	0
Merced	0	0
Modoc	0	0
Mono	0	0
Monterey	0	0
Napa	0	1
Nevada	0	0
Orange	0	1
Placer	0	0
Plumas	0	0
Riverside	5	3
Sacramento	5	1
San Benito	0	0
San Bernardino	2	2
San Diego	1	3
San Francisco	0	2
San Joaquin	1	0
San Luis Obispo	0	2
San Mateo	1	0
Santa Barbara	2	1
Santa Clara	2	4
Santa Cruz	0	0
Shasta	0	0
Sierra	0	0
Siskiyou	0	0
Solano	0	0
Sonoma	0	0
Stanislaus	2	0
Sutter	0	0
Tehama	0	1
Trinity	0	0
Tulare	1	1
Tuolumne	0	0
Ventura	2	0
Yolo	1	0
Yuba	0	0

*City health jurisdictions not included in county total.

Table 3. Number of reported invasive *Haemophilus influenzae* disease cases <15 years of age by serotype, age, race/ethnicity, and sex – California, 2014

All cases	
Serotype	
a	8
b (Hib)	0
c	0
e	0
f	4
other [a, c-f (non-b)]	4
nontypeable	21
unknown	3
Age	
<12 mos	15
1-14 years	25
Race/Ethnicity†	
Asian or Pacific Islander	0
Black	0
Hispanic	19
Other/Multiple Race	0
White	7
Sex	
Male	23
Female	17

†14 cases had unknown race/ethnicity

Hepatitis A Infection

Background

Hepatitis A virus (HAV) infection is an acute viral infection of the liver caused by a picornavirus in the family *Picornaviridae*, which are non-enveloped RNA viruses. HAV infection occurs world-wide but is most prevalent in developing areas with poor sanitary and hygienic conditions, such as parts of Africa, Asia, and Central/South America. Transmission of HAV occurs through the fecal-oral route, usually via person-to-person contact or through consumption of contaminated food or water. The incubation period for HAV infection ranges from 15 to 50 days and an infected individual will begin to shed virus in the feces 10 to 12 days after infection and may continue virus excretion up to three weeks after symptoms onset.

Characteristic symptoms of HAV infection include general malaise, jaundice (yellowing of the skin and/or eyes), abdominal pain, loss of appetite and dark urine. In rare cases HAV can result in liver failure and/or death. In 2006, the hepatitis A vaccine became a recommended routine vaccine for all children 12-24 months of age. Older persons at higher risk for HAV infection are also recommended to receive the vaccine and include persons who travel or live in countries where HAV is common, men who have sexual contact with other men, persons who use recreational drugs, people with chronic or long-term liver disease or clotting-factor disorders, caregivers of children from highly endemic areas, and household/close contacts of infected persons. The vaccine is highly effective, with two doses conferring protection in 95% of recipients for at least 15 years.

While HAV infection rates have declined by 95% in the United States since licensure of the vaccine in 1995, cases among travelers are still fairly common. Also, clusters and outbreaks continue to occur from infected food handlers who do not use proper hygiene or through ingestion of imported contaminated food from endemic countries. In 2003, the largest HAV infection outbreak in U.S. history was caused by contaminated green onions served at a single restaurant in Pennsylvania. The outbreak sickened more than 600 individuals and killed 4 people.

Recently several outbreaks in North America and Europe have been associated with frozen berries and sun-dried tomatoes. In 2013, California was part of a multi-state outbreak associated with a frozen berry mix that contained contaminated pomegranate arils imported from Turkey. The outbreak sickened 165 persons across ten states, with Californians representing 80 (49%) of the outbreak cases.

Surveillance Case Definition (2012)

California healthcare providers are required to report known or suspected cases of hepatitis A infection to the LHJ, in accordance with Title 17 of the California Code of Regulations. The LHJs report all confirmed hepatitis A cases to CDPH using the following case definition:

Clinical Case Definition

An acute illness with a discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain), and either a) jaundice, or b) elevated serum alanine aminotransferase (ALT) or aspartate aminotransferase (AST) levels.

Laboratory Criteria for Diagnosis

Immunoglobulin M (IgM) antibody to hepatitis A virus (anti-HAV) positive

Case Classification

Confirmed:

- A case that meets the clinical case definition and is laboratory confirmed; OR
- A case that meets the clinical case definition and occurs in a person who has an epidemiologic link with a person who has laboratory-confirmed hepatitis A (i.e., household or sexual contact with an infected person during the 15-50 days before the onset of symptoms)

Epidemiologic Summary

In 2014, a total of 142 HAV infection cases were reported statewide in 28 (46%) of 61 LHJs (Table 4). The statewide incidence of reported HAV infection in 2014 was 0.37 cases per 100,000 population (Table 5). This was a 44% decrease in cases from the previous year when 255 cases were reported in 37 (61%) of 61 LHJs at a rate of 0.67 cases per 100,000 population. In 2013, there was a higher than expected number of cases because of a large multi-state food-borne outbreak which impacted 80 Californians. These outbreak cases accounted for 31% of all 2013 cases. In 2014, there were no reported HAV outbreaks.

Of the 142 case-patients with disease onset in 2014, 57 (40%) were hospitalized. Two fatalities were reported in 2014 in an 83-year-old female and a 67-year-old male. Both deaths occurred in persons with pre-existing conditions who had unknown sources of infection and no typical risk factors for hepatitis A. Both also had unknown vaccination status.

The median age of all cases in 2014 was 42 years (range: 3–90 years). Persons aged 30–39 had the highest rate of HAV infection per 100,000 population (0.56), followed by persons aged 60 and older (0.52). There were eight cases in children under the age of 18 accounting for 6% of all confirmed cases. Of these, four were hospitalized. Although all were old enough to be vaccinated, only two reported a previous history of vaccination.

Asians/Pacific Islanders had the highest rate of HAV infection per 100,000 population (0.65) followed by non-Hispanic blacks (0.45) and persons in the "Other/Multi-race" group, which includes American Indians, Alaskan Natives, multi-racial and other race/ethnicities (0.34). Males became infected with hepatitis A in 2014 at a higher rate per 100,000 population than females (0.42 and 0.32, respectively).

Foreign travel to endemic areas was the most common risk factor identified in 2014 cases, with 54 (38%) of all cases reporting foreign travel during their exposure period (2-7 weeks prior to disease onset) [Figure 1]. Other risk factors included consuming raw or undercooked shellfish, found in 28 (20%) of all cases, illicit drug use, found in 5 (3.5%) of all cases and being a close contact of persons with HAV infection, found in 2 (1.4%) of all cases. These categories are not mutually exclusive as some cases had more than one risk factor. In approximately half (74; 52%) of all 2014 cases, no known reason for infection or significant risk factors were identified.

For more information about hepatitis A infection, please visit the CDPH Hepatitis A Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/HepatitisA.aspx).

Table 4. Reported hepatitis A cases by local health jurisdiction – California, 2013–2014

	2013	2014
CALIFORNIA	255	142
Alameda	6	9
City of Berkeley*	1	0
Alpine	0	0
Amador	0	0
Butte	0	2
Calaveras	0	0
Colusa	1	0
Contra Costa	10	3
Del Norte	0	0
El Dorado	5	0
Fresno	3	0
Glenn	0	0
Humboldt	3	1
Imperial	0	0
Inyo	0	0
Kern	4	3
Kings	0	0
Lake	1	1
Lassen	0	0
Los Angeles	60	42
City of Long Beach*	6	5
City of Pasadena*	0	3
Madera	1	0
Marin	0	1
Mariposa	1	0
Mendocino	2	0
Merced	0	0
Modoc	1	0
Mono	0	1
Monterey	2	0
Napa	0	0
Nevada	2	1
Orange	24	14
Placer	0	0
Plumas	0	0
Riverside	9	7
Sacramento	5	3
San Benito	0	0
San Bernardino	10	2
San Diego	40	14
San Francisco	4	3
San Joaquin	3	2
San Luis Obispo	2	0
San Mateo	9	1
Santa Barbara	1	2
Santa Clara	7	10
Santa Cruz	7	3
Shasta	3	2
Sierra	0	0
Siskiyou	1	0
Solano	3	0
Sonoma	2	1
Stanislaus	4	3
Sutter	0	0
Tehama	0	0
Trinity	0	0
Tulare	4	1
Tuolumne	0	0
Ventura	7	2
Yolo	1	0
Yuba	0	0

*City health jurisdictions not included in county total.

Table 5. Reported hepatitis A cases by age, race/ethnicity, and sex – California, 2014

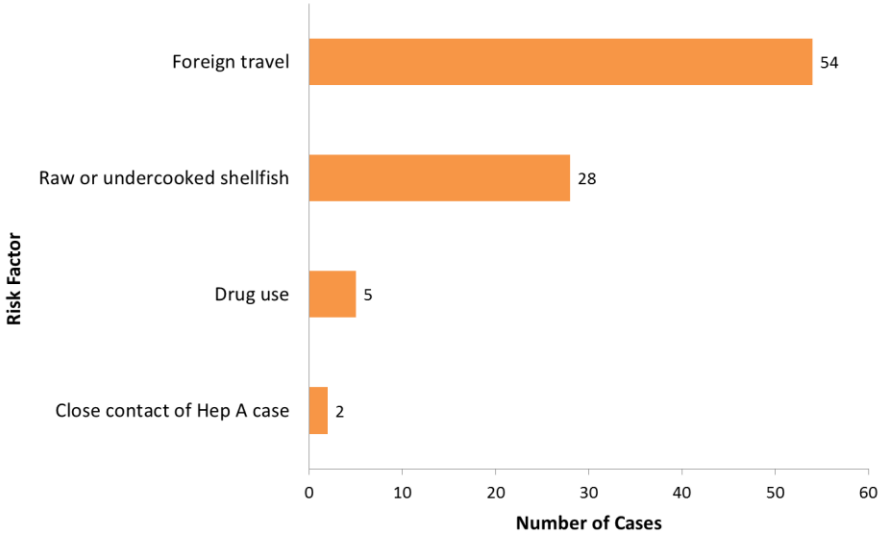
	Cases	Rate
Total		
California	142	0.37
Age*		
0-9	4	0.08
10-19	7	0.14
20-29	26	0.46
30-39	30	0.56
40-49	16	0.31
50-59	22	0.43
60+	37	0.52
Race/Ethnicity†		
Asian or Pacific Islander	34	0.65
Black	10	0.45
Hispanic	33	0.22
Other‡	4	0.34
White	42	0.28
Sex		
Female	61	0.32
Male	81	0.42

* Most persons 2-18 years old should have been vaccinated according to previous and current ACIP recommendations

† 19 persons had unknown race/ethnicity

‡ Other includes American Indian/Native Alaskan, multiple race and other race/ethnicity

Figure 1. Reported risk factors of hepatitis A cases – California, 2014



*Categories are not mutually exclusive; some cases had more than one risk factor

Hepatitis B Infection, Acute

Background

Hepatitis B is a liver disease caused by the hepatitis B virus (HBV). HBV is transmitted through contact with infected blood or body fluids. HBV infection may be asymptomatic, or patients may present with subacute illness (anorexia, nausea, malaise), clinical hepatitis with jaundice, or in rare instances, fulminant hepatitis. The likelihood of developing symptomatic acute HBV disease is age-dependent, with infants and young children least likely to experience symptoms. The incubation period for HBV is typically 90 days (range: 45-160 days) after exposure to HBV. Symptoms generally last for several weeks but can persist for up to 6 months.

Most people resolve acute HBV infection, but some progress to chronic infection. The likelihood of developing chronic infection is age-dependent; as many as 90% of infected infants develop chronic HBV infection, whereas only 5-10% of infected older children and adults progress to chronic infection. Approximately 25% of those who become chronically infected during childhood and 15% of those who become chronically infected after childhood die prematurely from cirrhosis or liver cancer, and the majority remain asymptomatic until onset of cirrhosis or end-stage liver disease.

Certain populations are at increased risk for HBV infection, particularly adults with lifestyles, occupations, or environments in which contact with blood or body fluids from infected persons is frequent. Approximately 79% of adults with newly acquired HBV infection are known to engage in high-risk sexual activity or injection-drug use. In addition, infants born to infected mothers are at risk for perinatal transmission. However, vaccination and prophylaxis of newborns prevents most instances of perinatal HBV. Hepatitis B vaccine has been recommended for all infants since 1991and is also recommended for susceptible sex partners of infected persons; sexually active persons who are not in a long-term, mutually monogamous relationship (e.g., >1 sex partner during the previous 6 months); persons seeking evaluation or treatment for a sexually transmitted disease; men who have sex with men; injection drug users; household contacts of infected persons; healthcare and public safety workers at risk for exposure to blood or blood-contaminated body fluids; persons with end-stage renal disease, including predialysis, hemodialysis, peritoneal dialysis, and home dialysis patients; residents and staff of facilities for developmentally disabled persons; travelers to regions where HBV infection is common; persons with chronic liver disease; persons with HIV infection; unvaccinated adults with diabetes mellitus who are aged 19 through 59 years (unvaccinated adults aged ≥60 years with diabetes may also be vaccinated at the discretion of treating clinicians); and all other persons seeking protection from HBV infection.

All unimmunized adults should be vaccinated in settings where a high proportion of adults are likely to be at risk for HBV infection (e.g., facilities for testing and treatment of sexually transmitted infections (STI) and human immunodeficiency virus (HIV), correctional facilities, drug treatment facilities, dialysis centers, etc.). Three doses of hepatitis B vaccine provide protection in 98-100% of infants and in >90% of teens and adults ≤40 years of age. After 40 years of age, the proportion of persons who have a protective antibody response after a 3-dose vaccination regimen declines below 90%, and by 60 years of age, protective levels of antibody develop in only 75% of vaccinated persons.

The incidence of new hepatitis B infections has declined dramatically in the United States from approximately 26,000 cases per year in the mid-1980s to 3,050 cases in 2013. Decreases during the 1980s and early 1990s were largely due to HIV education and prevention efforts that reduced high-risk

sexual and injection-drug use behaviors. During 1990-2004, acute hepatitis B infection cases among children and adolescents declined dramatically due to universal childhood vaccination.

Although the incidence of acute HBV infection is decreasing, it remains a major health issue in the United States; more than 700,000 persons have chronic HBV infection and many persons with acute HBV infection are asymptomatic and undiagnosed. Therefore, data on reported acute HBV cases do not represent the complete burden or the actual number of new HBV infections.

Surveillance Case Definition (2012)

California healthcare providers are required to report known or suspected cases of acute HBV infection to the local health jurisdiction, in accordance with Title 17 of the California Code of Regulations.

Clinical Description

An acute illness with a discrete onset of any sign or symptom* consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain), and either a) jaundice, or b) elevated serum alanine aminotransferase (ALT) levels >100 IU/L.

Laboratory Criteria

- Hepatitis B surface antigen (HBsAg) positive; AND
- Immunoglobulin M (IgM) antibody to hepatitis B core antigen (IgM anti-HBc) positive (if done)

Case Classification

Confirmed:

- Case that meets the clinical case definition, is laboratory confirmed, and is not known to have chronic hepatitis B

*A documented negative HBsAg laboratory test result within 6 months prior to a positive test (either HBsAg, HBeAg, or hepatitis B virus nucleic acid testing (HBV NAT) including genotype) result does not require an acute clinical presentation to meet the surveillance case definition.

Epidemiologic Summary

In 2014, a total of 108 cases of acute HBV infection were reported statewide in 26 (43%) of 61 LHJs, a 22% decrease from the previous year (Table 6). The overall incidence rate for 2014 was 0.28 cases per 100,000 population (Table 7). The median age of the 108 patients was 43 years (range: 1-73 years); 83 (77%) were male. Non-Hispanic white and Hispanic persons accounted for 44% and 37% of cases, respectively. Of the 108 cases, 54 (50%) were hospitalized and 2 (2%) died.

One pediatric acute HBV case was reported in 2014. The patient was a vaccinated 14-month-old with complicated hepatitis test results. The patient met the surveillance case definition for acute HBV so is included in the case counts, but HBV is unlikely to be the actual cause of illness.

Thirty-seven (34%) patients had no documented risk behaviors or exposures. Among the remaining patients, reported risk behaviors or exposures during the incubation period included: multiple sex partners (27; 25%), men who have sex with men (16; 15%), injection-drug use (10; 9%), sexual contact with a person with confirmed or suspected hepatitis B (9; 8%), and household contact with someone with confirmed or suspected hepatitis B (3; 3%) (Figure 2). Other potential exposures included surgery (3; 3%) and accidental needle stick/puncture (1; 1%). Additionally, one patient received a blood transfusion outside the U.S.

Table 6. Reported acute hepatitis B cases by local health jurisdiction – California, 2013–2014

	2013	2014
CALIFORNIA	139	108
Alameda	6	5
City of Berkeley*	0	0
Alpine	0	0
Amador	0	0
Butte	2	1
Calaveras	0	0
Colusa	0	0
Contra Costa	2	2
Del Norte	0	0
El Dorado	0	0
Fresno	4	3
Glenn	0	0
Humboldt	0	0
Imperial	2	1
Inyo	0	0
Kern	3	3
Kings	0	0
Lake	0	1
Lassen	0	0
Los Angeles	54	40
City of Long Beach*	4	3
City of Pasadena*	3	1
Madera	2	1
Marin	0	0
Mariposa	0	0
Mendocino	0	0
Merced	0	0
Modoc	0	0
Mono	0	0
Monterey	0	0
Napa	1	0
Nevada	0	0
Orange	12	7
Placer	2	0
Plumas	0	0
Riverside	3	4
Sacramento	4	0
San Benito	0	0
San Bernardino	7	9
San Diego	9	7
San Francisco	4	0
San Joaquin	2	4
San Luis Obispo	0	1
San Mateo	2	1
Santa Barbara	1	1
Santa Clara	4	4
Santa Cruz	0	1
Shasta	1	1
Sierra	0	0
Siskiyou	0	1
Solano	0	0
Sonoma	0	1
Stanislaus	5	2
Sutter	0	0
Tehama	0	0
Trinity	0	0
Tulare	0	3
Tuolumne	0	0
Ventura	0	0
Yolo	0	0
Yuba	0	0

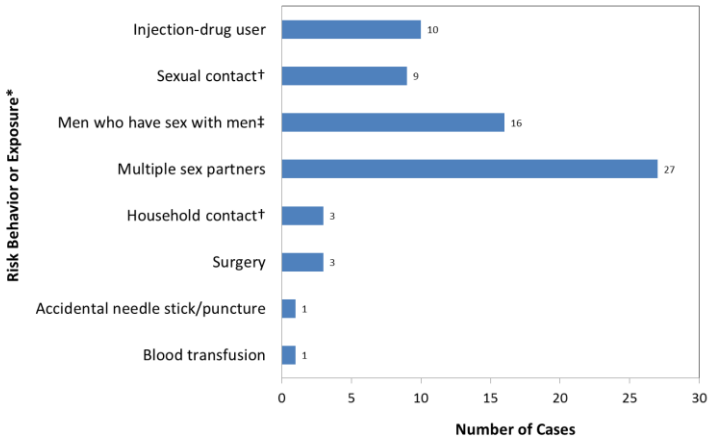
*City health jurisdictions not included in county total.

Table 7. Number and incidence rate of reported acute hepatitis B cases, by age, sex, and race/ethnicity – California, 2014

	Cases	Percent of Cases	Rate per 100,000 pop.
Total			
California	108	100	0.28
Age*			
0-9	1	1	0.02
10-19	0	0	0.00
20-29	7	6	0.12
30-39	31	29	0.58
40-49	36	33	0.70
50-59	26	24	0.51
60+	7	6	0.10
Sex			
Male	83	77	0.43
Female	25	23	0.13
Race/Ethnicity†			
American Indian/Native Alaskan	0	0	0.00
Asian or Pacific Islander	4	4	0.08
Black	9	8	0.40
Hispanic	37	34	0.25
Other or Multiple Race	5	5	0.49
White	44	41	0.29

* Most persons 0-19 years old should have been vaccinated according to current and previous ACIP recommendations
† 9 cases had unknown race/ethnicity

Figure 2. Reported risk behaviors/exposures for acute hepatitis B cases – California, 2014



* Categories are not mutually exclusive; some cases had more than one risk behavior/exposure
† Contact with a person with confirmed or suspected hepatitis B
‡ A total of 83 acute hepatitis B cases were reported among males in 2014

For more information about acute HBV infection, please visit the CDPH Hepatitis B Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/HepatitisB.aspx).

Perinatal Hepatitis B Infection

Background

Hepatitis B virus can be transmitted perinatally from mother to child during birth. It is important that all pregnant women receive prenatal testing for hepatitis B infection, i.e. hepatitis B surface antigen (HBsAg), and are reported to the LHJ if they test HBsAg-positive to ensure that their infants receive appropriate postexposure prophylaxis (PEP) at birth.

Infants who are born to HBsAg-positive women should receive hepatitis B immune globulin (HBIG) and hepatitis B vaccine within 12 hours of birth. The second and third doses of the hepatitis B vaccine series are administered at 1-2 months of age and at 6 months of age, respectively. Hepatitis B vaccine is 95% effective in preventing hepatitis B infection in infants born to HBsAg-positive women. Post-vaccination serologic testing for HBsAg and hepatitis B surface antibody (anti-HBs) to HBsAg is recommended for infants of infected women after the infant is 9 months of age, or from 3–6 months after completion of the vaccine series.

Unfortunately, even with appropriate PEP, a small percentage of infants born to infected women become infected and eventually develop chronic hepatitis B infection. Infected infants are then reported to CDPH using the criteria as outlined below.

Surveillance Case Definition (1995)

California healthcare providers are required to report known or suspected cases of perinatal hepatitis B infection to the LHJ, in accordance with Title 17 of the California Code of Regulations. The LHJs report all confirmed perinatal hepatitis B infection cases to CDPH using the following case definition:

Clinical Case Definition

- Infant has an HBsAg-positive laboratory test result
- Age of infant is 1 month to 24 months at time of testing
- Infant was born in the United States or in U.S. territories to an HBsAg-positive mother

Epidemiologic Summary

In 2014, 14 cases of perinatal hepatitis B infection were reported statewide in Alameda (1), Fresno (1), Long Beach City (2), Los Angeles (3), Napa (1), Orange (2), Riverside (1), and Sacramento (3) counties. Two of the 14 children were born in 2012, ten were born in 2013, and two were born in 2014. The range of ages for the cases at the time of post-vaccination serologic testing was 9 to 21 months of age. All of the 14 children had received appropriate PEP at birth. All children completed the HBV vaccine series. There were two additional hepatitis B infections reported to CDPH in children greater than 24 months of age (27 months and 31 months) who were therefore classified as chronic hepatitis B cases according to the case definition.

For more information about perinatal hepatitis B infection, please visit the CDPH Perinatal Hepatitis B Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/PerinatalHepatitisBPrevention.aspx).

Measles

Background

Measles virus is an RNA virus in the *Paramyxoviridae* family and is considered one of the most contagious infectious agents. Endemic transmission of measles was declared eliminated in the United States in 2000. In 2002, measles was declared eliminated from the entire World Health Organization (WHO) Region of the Americas, which includes all of North America, and Central and South America. However, measles is still circulating in the rest of the world including Western Europe, Africa, and Asia. Measles continues to be imported into the U.S. by susceptible persons who travel or live in measles-endemic areas where they are infected before return to the U.S.

The Advisory Committee on Immunization Practices (ACIP) recommends two doses of measles containing vaccine as part of the routine childhood vaccination schedule: the first dose is recommended at 12-15 months and a second dose between 4-6 years. Infants living in or traveling to measles endemic areas can be vaccinated as early as 6 months of age. After one dose of vaccine approximately 95% of people will be protected against measles, and after two doses more than 99% will be protected against measles. A very high level (92%-94%) of population immunity is required to interrupt measles transmission.

Surveillance Case Definition (2013)

California healthcare providers are required to report known or suspected cases of measles to the LHJ, in accordance with Title 17 of the California Code of Regulations using the following case definition:

Clinical Description

An acute illness characterized by:
- Generalized, maculopapular rash lasting ≥3 days; AND
- Temperature ≥101°F or 38.3°C; AND
- Cough, coryza, or conjunctivitis.

Case Classification

Probable:
In the absence of a more likely diagnosis, an illness that meets the clinical description with:
- No epidemiologic linkage to a laboratory-confirmed measles case; AND
- Noncontributory or no measles laboratory testing.

Confirmed:
An acute febrile rash illness† with:
- Isolation of measles virus‡ from a clinical specimen; OR
- Detection of measles-virus specific nucleic acid‡ from a clinical specimen using polymerase chain reaction; OR
- Immunoglobulin G (IgG) antibody seroconversion‡ or a significant rise in measles IgG antibody‡ using any evaluated and validated method; OR
- A positive serologic test for measles immunoglobulin M (IgM) antibody‡§; OR
- Direct epidemiologic linkage to a case confirmed by one of the methods above.

† Temperature does not need to reach ≥101°F/38.3°C and rash does not need to last ≥3 days.
‡ Not explained by MMR vaccination during the previous 6-45 days.
§ Not otherwise ruled out by other confirmatory testing or more specific measles testing in a public health laboratory.

Epidemiologic Summary

In 2014, a total of 75 measles cases were reported statewide from 16 (26%) of 61 LHJs (Table 8). This was an increase from the previous year, when 18 cases were reported by 10 LHJs. Dates of rash onset ranged from January 11 to December 31, 2014.

Of the 75 cases with disease onset in 2014, 18 (24%) were hospitalized, including eight adults and ten children, one of which was an infant <12 months (Table 9). Among those with complications reported, three had pneumonia, six had otitis media, and one had encephalitis. The last fatal measles case in California was reported in 2003.

The median age of the 2014 cases was 21 years (range: 5 months–60 years). Of the 32 pediatric cases, 28 were unvaccinated (Table 10).

Several small clusters or outbreaks occurred in 2014; the majority of cases (79%) acquired measles domestically. From January 11 to June 28, 2014, 61 measles cases were reported with 47 of these occurring in 12 different clusters. The source case in five of these clusters had international travel. The source cases for two of the remaining 7 clusters were likely exposed to measles at a theme park, and five clusters had an unknown source. The largest cluster during this time period had 11 measles cases; among these, 3 were healthcare workers, and 3 cases were exposed to measles in a daycare setting.

Also in 2014, the beginning of a measles outbreak associated with a California theme park exposure was identified. The measles exposure likely occurred from December 17th – 20th, and limited local transmission was observed in the community. Fourteen measles cases with onset in 2014 were associated with this outbreak. The outbreak had a total of 131 cases at its conclusion on April 17th, 2015.

Among 2014 cases who acquired measles internationally, travel was reported to Philippines, India, Singapore, S. Korea, Thailand, Vietnam and Western Europe (Table 11). Many large outbreaks occurred internationally, with the Philippines reporting over 58,000 cases and 110 measles deaths in 2014. Measles genotype B3 was the most frequent genotype observed among California measles cases with viral specimens; this is the same genotype associated with the large measles outbreak in the Philippines.

For more information about measles, please visit the CDPH Measles Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/Measles.aspx).

Table 8. Reported measles cases by local health jurisdiction† – California, 2013–2014

	2013	2014
CALIFORNIA	18	75
Alameda*	0	5
City of Berkeley*	1	1
Alpine	0	0
Amador	0	0
Butte	0	0
Calaveras	0	0
Colusa	0	0
Contra Costa	0	4
Del Norte	0	0
El Dorado	0	0
Fresno	0	0
Glenn	0	0
Humboldt	0	1
Imperial	0	0
Inyo	0	0
Kern	0	0
Kings	0	0
Lake	0	0
Lassen	0	0
Los Angeles*	3	13
City of Long Beach*	0	0
City of Pasadena*	0	1
Madera	0	0
Marin	0	0
Mariposa	0	0
Mendocino	1	0
Merced	0	0
Modoc	0	0
Mono	0	0
Monterey	1	2
Napa	0	0
Nevada	0	0
Orange	2	24
Placer	0	0
Plumas	0	0
Riverside	1	6
Sacramento	0	0
San Benito	0	0
San Bernardino	0	1
San Diego	2	6
San Francisco	3	0
San Joaquin	0	1
San Luis Obispo	0	0
San Mateo	0	4
Santa Barbara	0	0
Santa Clara	0	2
Santa Cruz	3	0
Shasta	0	1
Sierra	0	0
Siskiyou	0	0
Solano	0	0
Sonoma	0	0
Stanislaus	0	0
Sutter	0	0
Tehama	0	0
Trinity	0	0
Tulare	0	0
Tuolumne	0	0
Ventura	1	3
Yolo	0	0
Yuba	0	0

†Local health jurisdiction where case was identified.
*City health jurisdictions not included in county total.

Table 9. Characteristics of measles cases – California, 2014

		Cases	Percent of Cases
Sex			
	Male	37	49
	Female	38	51
Age			
	<12 months	3	4
	1-4 years	15	20
	5-19 years	18	24
	≥ 20 years	39	52
Hospitalized*			
	Yes	18	25
	No	54	75
MMR Status			
	2 MMR	12	16
	1 MMR	3	4
	0 MMR	39	52
	Unknown†	21	28
Source			
	International	16	21
	Indigenous	59	79
Genotype‡			
	B3	41	79
	D8	10	19
	H1	1	2

* Three cases had missing hospitalization status.
† Includes self-reported vaccination status.
‡ Viral specimens were available for 52 patients.

Table 10. Measles cases by age and vaccination status – California, 2014

Age, in years	≥ 2 MMR	1 MMR	0 MMR	Unknown	Total Cases
< 2	0	1	7	0	8
2-5	0	1	11	0	12
6-17	2	0	10	0	12
18-54	10	1	11	20	42
≥ 55	0	0	0	1	1

Table 11. Countries visited during incubation period reported by measles cases with history of international travel – California, 2014

Country/Region*	Number Reporting Travel
Philippines	8
India	3
China	1
Singapore	1
South Korea	1
Thailand	1
Vietnam	1
Western Europe	1

* Some cases traveled to more than one country or region.

Meningococcal Disease

Background

Invasive meningococcal disease (IMD) is caused by the bacterium *Neisseria meningitidis* and most commonly presents as meningitis and/or sepsis (bloodstream infection). IMD is a serious infection and the case-fatality rate is estimated to be 9% to 12%. Meningococcal bacteria are classified into 13 serogroups based on the structure of the outer polysaccharide capsule. Almost all IMD is caused by one of five serogroups: A, B, C, Y, and W. The meningococcal bacteria may be carried in the back of the throat without causing invasive disease, and as many as 10% of adolescents and adults are asymptomatic transient carriers of *N. meningitidis*. The incubation period of IMD is typically 3-7 days.

A quadrivalent conjugate vaccine (MenACWY) which provides protection against infection due to serogroups A, C, Y and W is routinely recommended for all adolescents and other high risk persons (military recruits, travelers to endemic areas, persons with asplenia or complement deficiency, laboratory workers with exposure to meningococcus etc.) in the United States.

Two vaccines for serogroup B meningococcal disease were licensed in 2014 and 2015 for children and adults 10-25 years of age and are routinely recommended for high-risk persons and for use during outbreaks. Adolescents and young adults 16-23 years of age may also be immunized.

Surveillance Case Definition (2010)

California healthcare providers and laboratories are required to report known or suspected cases of meningococcal disease to the LHJ, in accordance with Title 17 of the California Code of Regulations. The LHJs report all suspect, probable, and confirmed meningococcal disease cases to CDPH using the following case definition:

Case Classification

Confirmed:

- Isolation of *N. meningitidis*:
  - From a normally sterile body site (e.g., blood or cerebrospinal fluid, or, less commonly, synovial, pleural, or pericardial fluid); OR
  - From purpuric lesions.

Probable:

- Detection of *N. meningitidis*-specific nucelic acid in a specimen obtained from a normally sterile body site (e.g., blood or CSF), using a validated polymerase chain reaction (PCR) assay; OR
- Detection of *N. meningitidis* antigen:
  - in formalin-fixed tissue by immunohistochemistry (IHC); OR
  - in CSF by latex agglutination.

Suspected:

- Clinical purpura fulminans in the absence of a positive blood culture; OR
- Gram-negative diplococci, not yet identified, isolated from a normally sterile body site (e.g., blood or CSF).

Epidemiologic Summary

The incidence of IMD in California has declined over the past several decades, reaching a historical low in 2014 (Figure 3). In 2014, 56 IMD cases were reported statewide, for an incidence rate of 0.15 cases per 100,000 population (Table 12). Of the 56 cases, 53 (95%) were serogrouped; serogroups B (20; 38%) and C (21; 40%) were most frequently identified (Figure 4). Ten (18%) fatalities were reported in 2014; 50% of fatalities were caused by serogroup C.

Thirteen (23%) cases occurred in infants and children less than 18 years of age, including 2 fatalities (Table 13). Among all serogroups, the highest incidence of disease occurred in infants less than 1 year of age (Figure 5). Of the pediatric cases with known serogroup, 6 (50%) were caused by a serogroup included in the MenACWY vaccine. Out of 16 total patients with IMD caused by serogroup included in the MenACWY vaccine with known vaccination status, only 2 (13%) had previously received any doses of MenACWY vaccine.

Five meningococcal disease cases among adult men who identified as having sex with other men (MSM) were reported from Los Angeles County. In April 2014, the Los Angeles County Department of Public Health recommended meningococcal vaccination for all HIV-positive MSM and all MSM who regularly have close or intimate contact with multiple partners or who seek partners through use of a digital app.

For more information about meningococcal disease, please visit the CDPH Meningococcal Disease Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/MeningococcalDisease.aspx).

Figure 3. Incidence of reported invasive meningococcal disease by year of onset – California, 1993–2014

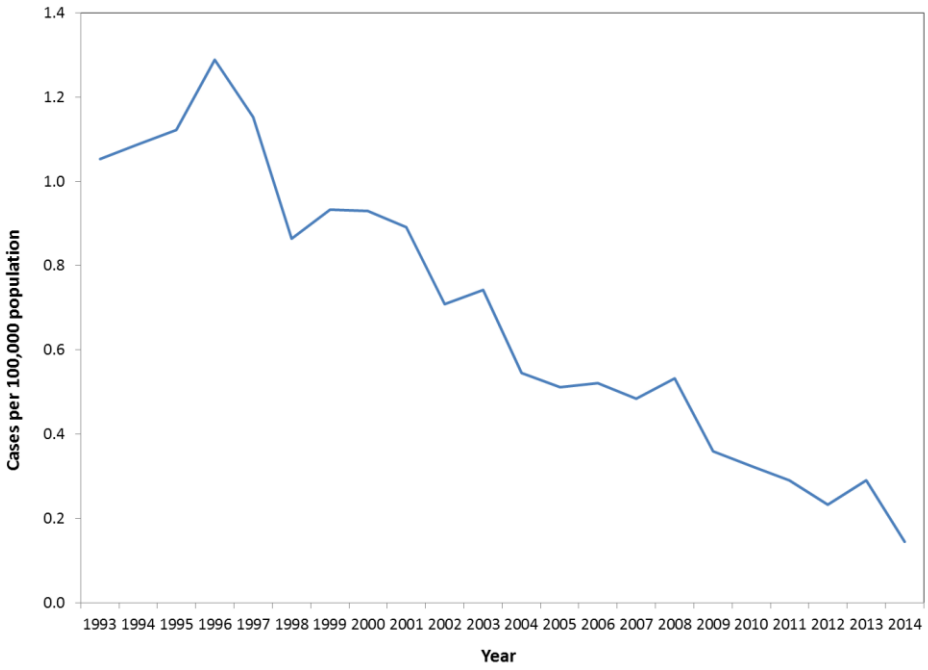


Table 12. Reported invasive meningococcal disease by local health jurisdiction – California, 2013–2014

	2013	2014
CALIFORNIA	111	56
Alameda*	5	5
City of Berkeley*	0	0
Alpine	0	0
Amador	0	0
Butte	0	0
Calaveras	0	0
Colusa	1	0
Contra Costa	4	1
Del Norte	0	0
El Dorado	0	1
Fresno	4	2
Glenn	0	0
Humboldt	0	0
Imperial	0	0
Inyo	0	0
Kern	1	4
Kings	0	0
Lake	0	1
Lassen	0	0
Los Angeles*	18	12
City of Long Beach*	1	0
City of Pasadena*	0	0
Madera	3	0
Marin	2	0
Mariposa	0	0
Mendocino	3	1
Merced	3	0
Modoc	0	0
Mono	0	0
Monterey	1	1
Napa	0	0
Nevada	0	0
Orange	5	3
Placer	0	0
Plumas	0	0
Riverside	3	2
Sacramento	4	4
San Benito	0	0
San Bernardino	9	1
San Diego	15	9
San Francisco	4	2
San Joaquin	1	0
San Luis Obispo	0	0
San Mateo	1	1
Santa Barbara	6	0
Santa Clara	3	4
Santa Cruz	2	0
Shasta	1	0
Sierra	0	0
Siskiyou	1	0
Solano	0	1
Sonoma	3	0
Stanislaus	0	0
Sutter	2	0
Tehama	0	0
Trinity	0	0
Tulare	3	1
Tuolumne	0	0
Ventura	1	0
Yolo	1	0
Yuba	0	0

*City health jurisdictions not included in county total.

Figure 4. Invasive meningococcal disease cases by serogroup – California, 2014

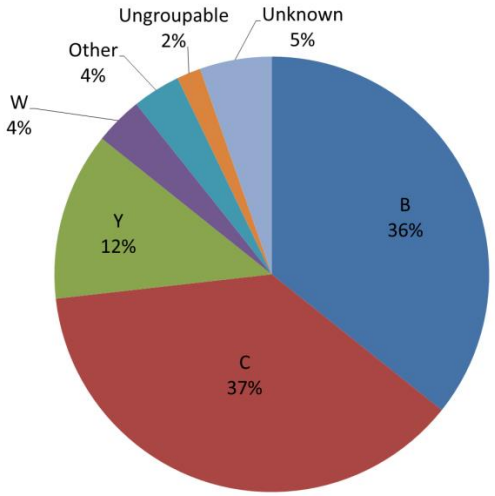
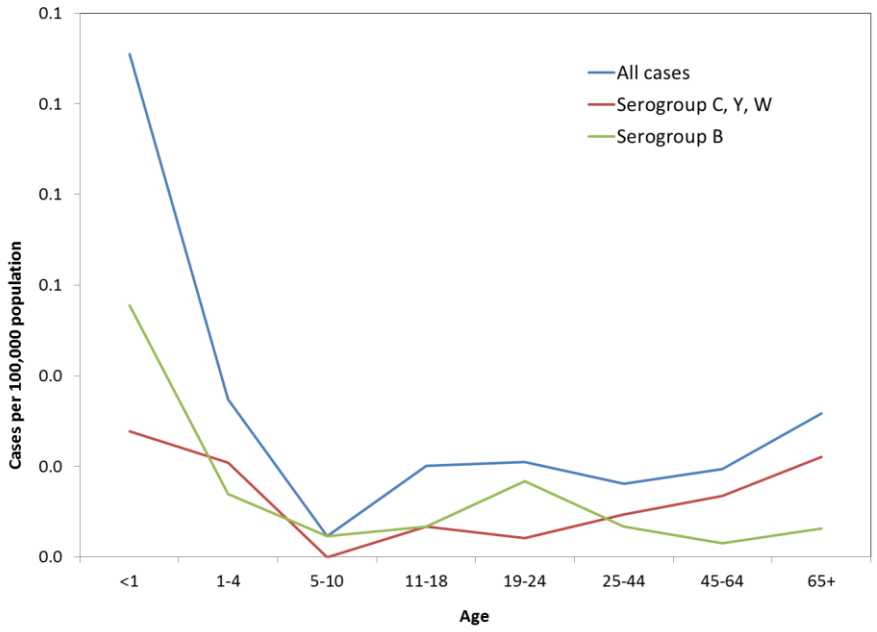


Table 13. Number of reported invasive meningococcal disease cases by age, sex, race/ethnicity and serogroup – California, 2014

	All serogroups	B	C	Y	W	Other/ Nongroupable	Unknown
California	56	20	21	7	2	3	3
Age							
<1	4	2	1	0	0	0	1
1-4	5	2	2	0	1	0	0
5-10	1	1	0	0	0	0	0
11-18	6	2	1	1	0	1	1
19-24	5	4	1	0	0	0	0
25-44	12	5	5	1	1	0	0
45-64	13	2	7	2	0	1	1
65+	10	2	4	3	0	1	0
Sex							
Male	34	10	19	2	1	1	0
Female	22	10	2	5	1	2	1
Race/Ethnicity*							
Asian or Pacific Islander	3	2	1	0	0	0	0
Black	6	0	3	2	0	1	0
Hispanic	18	6	8	2	0	0	2
Other/Multiple Race	2	0	1	0	1	0	0
White	21	11	5	2	1	1	1

* 6 cases had unknown race/ethnicity

Figure 5. Invasive meningococcal disease cases by age and serogroup* – California, 2014



* No serogroup A disease cases were identified.

Mumps

Background

Mumps virus, a paramyxovirus, causes an acute viral syndrome, and its most characteristic feature is swelling of one or more of the salivary glands (usually the parotids). Complications of mumps include orchitis, thrombocytopenia, encephalitis, and deafness, among others. Mumps virus is transmitted by contact with respiratory secretions or droplets from the respiratory tracts of infected persons. Approximately one-third of infections do not cause clinically apparent disease, which makes disease identification and prevention of spread difficult.

The ACIP recommends two doses of mumps containing vaccine as part of the routine childhood vaccination schedule: the first dose is recommended at 12-15 months and a second dose between 4-6 years. Mumps vaccine effectiveness after 2 doses is 88% however, protection may wane over time. In recent mumps outbreaks on college campuses, the majority of cases had received 2 doses of MMR vaccine.

Surveillance Case Definition (2012)

California healthcare providers are required to report known or suspected cases of mumps to the LHJ, in accordance with Title 17 of the California Code of Regulations using the following case definition:

Case Classification

Suspected:

- Parotitis, acute salivary gland swelling, orchitis, or oophoritis unexplained by another more likely diagnosis, OR
- A positive lab result with no mumps clinical symptoms (with or without epidemiological-linkage to a confirmed or probable case).

Probable:

- Acute parotitis or other salivary gland swelling lasting at least 2 days, or orchitis or oophoritis unexplained by another more likely diagnosis, in:
  - A person with a positive test for serum anti-mumps immunoglobulin M (IgM) antibody; OR
  - A person with epidemiologic linkage to another probable or confirmed case or linkage to a group/community defined by public health during an outbreak of mumps.

Confirmed:

- A positive mumps laboratory confirmation for mumps virus with reverse transcription polymerase chain reaction (RT-PCR) or culture in a patient with an acute illness characterized by any of the following:

  - Acute parotitis or other salivary gland swelling, lasting at least 2 days
  - Aseptic meningitis
  - Encephalitis
  - Hearing loss
  - Orchitis
  - Oophoritis
  - Mastitis
  - Pancreatitis

Epidemiologic Summary

In 2014, a total of 10 confirmed and 27 probable mumps cases were reported statewide (Table 14). Probable mumps cases are classified on the presence of clinical symptoms and mumps IgM positivity. The mumps case definition changed in 2012, such that only clinically compatible cases with virus detection by PCR could be considered confirmed. In the former case definition additional types of laboratory testing

were considered confirmatory; therefore, fewer cases in 2012 met the confirmed case definition than in prior years. However, since mumps IgM detection has a high rate of false positivity generally, and persons who have received 2 MMR can have an attenuated IgM response upon mumps infection, viral detection by PCR should be considered more reliable at detecting real cases.

The 37 confirmed and probable cases from 2014 were reported from 15 (25%) of 61 LHJs. Five of the confirmed and probable cases reported international travel. Epidemiologic characteristics of probable and confirmed mumps cases appear in Table 15.

In 2014, an outbreak of mumps occurred among National Hockey League players and affiliates. Eight patients in California were associated with this outbreak.

For more information about mumps, please visit the CDPH Mumps Webpage (https://www.cdph.ca.gov/HealthInfo/discond/Pages/Mumps.aspx).

Table 14. Reported confirmed and probable mumps cases by local health jurisdiction – California, 2013–2014

	2013	2014
CALIFORNIA	30	37
Alameda*	1	1
City of Berkeley*	0	0
Alpine	0	0
Amador	0	0
Butte	0	1
Calaveras	1	0
Colusa	0	0
Contra Costa	2	1
Del Norte	0	0
El Dorado	0	0
Fresno	1	1
Glenn	0	0
Humboldt	0	0
Imperial	0	0
Inyo	0	0
Kern	0	0
Kings	0	0
Lake	0	0
Lassen	0	0
Los Angeles*	9	9
City of Long Beach*	0	0
City of Pasadena*	0	1
Madera	0	0
Marin	0	0
Mariposa	0	0
Mendocino	0	0
Merced	0	0
Modoc	0	0
Mono	0	0
Monterey	0	0
Napa	0	0
Nevada	0	0
Orange	2	8
Placer	1	0
Plumas	0	0
Riverside	2	4
Sacramento	0	1
San Benito	0	0
San Bernardino	1	3
San Diego	2	2
San Francisco	2	0
San Joaquin	1	0
San Luis Obispo	0	0
San Mateo	1	0
Santa Barbara	1	0
Santa Clara	0	1
Santa Cruz	0	1
Shasta	0	0
Sierra	0	0
Siskiyou	0	0
Solano	0	0
Sonoma	0	0
Stanislaus	1	1
Sutter	0	0
Tehama	0	0
Trinity	0	0
Tulare	0	0
Tuolumne	0	0
Ventura	1	2
Yolo	1	0
Yuba	0	0

* City health jurisdictions not included in county total.

Table 15. Characteristics of mumps cases – California, 2014

		Cases	Percent of Cases
Case status			
	Probable	27	73
	Confirmed	10	27
Sex			
	Male	23	62
	Female	14	38
Age*			
	<12 months	0	-
	1-4 years	5	14
	5-19 years	8	22
	≥ 20 years	23	64
Hospitalized†			
	Yes	3	9
	No	30	91
MMR Status			
	3 MMR	1	3
	2 MMR	5	14
	1 MMR	7	19
	0 MMR	2	5
	Unknown	22	59
Source			
	International	5	14
	Indigenous	32	86

* One patient had missing age and date of birth.

† Four patients were missing hospitalization status.

Pertussis

Background

Pertussis, also known as whooping cough, is a highly contagious respiratory disease caused by the bacterium *Bordetella pertussis*. People with pertussis can have severe coughing attacks that make it difficult to breathe, resulting in a characteristic "whooping" sound at the end of a series of coughs when a breath is taken. Transmission of pertussis most commonly occurs when a susceptible person inhales aerosolized droplets from the respiratory tract of an infected person. The incubation period of pertussis is typically 7 to 10 days. Infants too young for vaccination are at the greatest risk for serious complications and death from pertussis.

Pregnant women should receive a dose of Tdap vaccine during each pregnancy between 27 and 36 weeks gestation, regardless of vaccination history. Contacts and caregivers of infants too young for vaccination should be up-to-date with pertussis vaccination to surround the infants with a "cocoon" of protection. Infants can begin the primary DTaP vaccine series as early as six weeks of age. In addition, adolescents and adults should receive a single Tdap dose. Immunity to pertussis from both vaccine and natural infection wanes over time, so pertussis can affect persons of any age.

Since the 1980s, there has been an increase in pertussis incidence in the United States. Pertussis occurs cyclically, with peaks in disease every 3 to 5 years. In 2014, California experienced an epidemic of pertussis that caused over 11,000 cases, including 3 infant deaths. This was the highest number of pertussis cases reported in California in over 60 years.

Surveillance Case Definition (2014)

California healthcare providers are required to report known or suspected cases of pertussis to the LHJ, in accordance with Title 17 of the California Code of Regulations. The LHJs report all suspect, probable, and confirmed pertussis cases to CDPH using the following case definition:

Clinical Case Definition

A cough illness lasting ≥2 weeks with at least one of the following: paroxysms of coughing, inspiratory "whoop," or post-tussive vomiting, without other apparent cause (as reported by a health professional)

Case Classification

Confirmed:

- An acute cough illness of any duration with isolation of *B. pertussis* from a clinical specimen; OR
- A case that meets the clinical case definition and is confirmed by detection of *B. pertussis*-specific nucleic acid by polymerase chain reaction (PCR); OR
- An acute cough illness of any duration with detection of *B. pertussis* antigen in formalin-fixed tissue by appropriate immunohistochemistry (IHC) methods; OR
- A case that meets the clinical case definition and is epidemiologically-linked directly to a laboratory-confirmed case of pertussis.

Probable:

- A case that meets the clinical case definition and is not laboratory-confirmed with culture or PCR and is not epidemiologically-linked directly to a confirmed case.

Suspect (reportable in California, only):

- An acute cough illness of any duration with detection of *B. pertussis*-specific nucleic acid by PCR; OR
- An acute cough illness of any duration with at least one of the following: paroxysms of coughing, inspiratory "whoop", or post-tussive vomiting, that is epidemiologically-linked directly to a confirmed case.

Epidemiologic Summary

In 2014, a total of 11,213 pertussis cases were reported statewide in 55 (90%) of 61 LHJs. This was a significant increase from the previous year, when 2,537 cases were reported in 50 (82%) LHJs (Table 16). The statewide incidence of reported pertussis in 2014 was 29.3 cases per 100,000 population.

Of the 11,213 cases with disease onset in 2014, 458 (4%) were hospitalized; 280 (61%) of the hospitalized patients were younger than 4 months of age. Three fatalities with disease onset in 2014 were reported; all were infants who were ≤5 weeks old at time of disease onset. The median age of all cases in 2014 was 12 years (range: 0-99 years). The majority of cases (9,902; 89%) occurred in children less than 18 years of age. Of the 9,902 pediatric cases, 755 (8%) were in infants less than 6 months of age, and 2,631 (27%) were adolescents 14-16 years of age (Figure 6). Of the 9,036 pediatric cases aged 6 months – 18 years, 7,450 (82%) were known to have previously received at least one dose of pertussis vaccine prior to illness onset, 480 (5%) were unimmunized against pertussis, and 1,106 (12%) had unknown pertussis immunization status.

Rates by race/ethnicity were highest for Hispanic infants under one year of age and lower for non-Hispanic infants of all racial groups (Figure 7). Among children and adolescents, the highest rates were in non-Hispanic whites.

Of the 11,213 cases reported in 2014, 8,027 (72%) were classified as confirmed, 639 (6%) as probable, and 2,547 (23%) as suspect. Among cases with complete information, the most commonly reported symptoms were paroxysmal coughing (80%), post-tussive vomiting (44%), inspiratory "whoop" (34%) and apnea (19%).

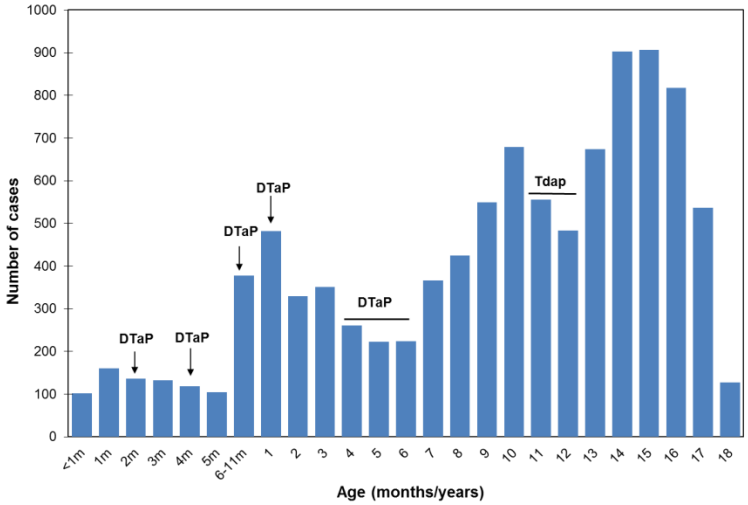
For more information about pertussis, please visit the CDPH Pertussis Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/Pertussis.aspx).

Table 16. Reported pertussis cases by local health jurisdiction – California, 2013–2014

	2013	2014
CALIFORNIA	2537	11213
Alameda*	124	364
City of Berkeley*	13	56
Alpine	0	0
Amador	2	1
Butte	33	33
Calaveras	2	17
Colusa	0	0
Contra Costa	69	478
Del Norte	0	2
El Dorado	4	36
Fresno	44	392
Glenn	0	1
Humboldt	5	149
Imperial	3	10
Inyo	0	0
Kern	31	166
Kings	2	16
Lake	3	3
Lassen	0	5
Los Angeles*	342	2000
City of Long Beach*	16	182
City of Pasadena*	2	22
Madera	10	47
Marin	184	272
Mariposa	0	0
Mendocino	6	10
Merced	1	9
Modoc	0	6
Mono	2	0
Monterey	49	129
Napa	13	137
Nevada	70	16
Orange	113	447
Placer	86	121
Plumas	1	1
Riverside	80	470
Sacramento	70	447
San Benito	1	11
San Bernardino	39	206
San Diego	408	2019
San Francisco	59	130
San Joaquin	26	215
San Luis Obispo	17	45
San Mateo	104	129
Santa Barbara	28	120
Santa Clara	254	538
Santa Cruz	54	165
Shasta	7	33
Sierra	0	0
Siskiyou	5	7
Solano	15	144
Sonoma	51	704
Stanislaus	16	92
Sutter	2	8
Tehama	0	38
Trinity	0	6
Tulare	25	37
Tuolumne	2	16
Ventura	36	348
Yolo	4	147
Yuba	4	10

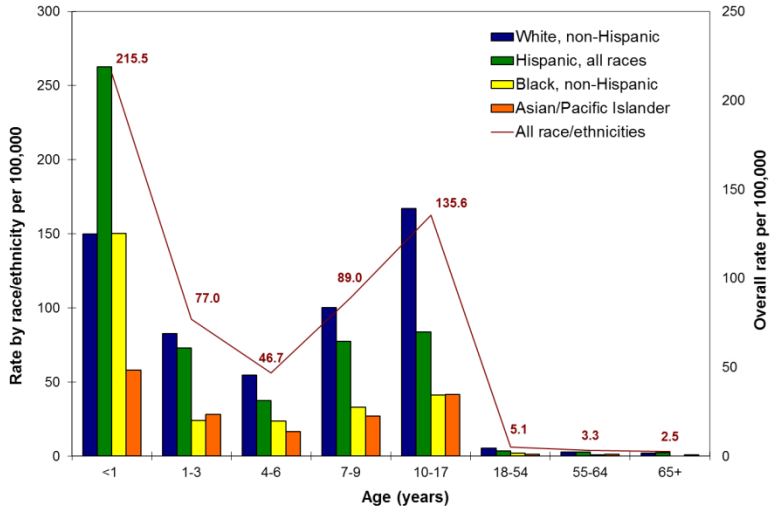
* City health jurisdictions not included in county total.

Figure 6. Pediatric pertussis cases by age – California, 2014



*Reported to CDPH as of 6/1/2015
Annotations in black indicate recommended vaccine doses; DTaP=Diphtheria, tetanus, and acellular pertussis vaccine; Tdap=Tetanus, diphtheria, and acellular pertussis vaccine

Figure 7. Pertussis incidence rates by age and race/ethnicity – California, 2014*



*Reported to CDPH as of 6/1/2015

Poliovirus Infection

Background

Poliovirus is a member of the enterovirus subgroup, family Picornaviridae. Enteroviruses are transient inhabitants of the gastrointestinal tract. Picornaviruses are small, ether-insensitive viruses with an RNA genome. There are three poliovirus serotypes (P1, P2, and P3). Immunity to one serotype does not produce significant immunity to the other serotypes.

Poliovirus is spread through stool or secretions from an infected person and, though less common, through droplets from a sneeze or cough. The response to poliovirus infection is highly variable and is categorized on the basis of the severity of clinical presentation. Up to 95% of all poliovirus infections are asymptomatic. Approximately 4%–8% of poliovirus infections consist of a minor, nonspecific illness without clinical or laboratory evidence of central nervous system invasion and fewer than 1% of all polio infections result in classic polio, which is characterized by acute flaccid paralysis. Estimates of the ratio of asymptomatic to paralytic illness vary from 50:1 to 1,000:1 (usually 200:1). Infected persons without symptoms shed virus from the respiratory tract and in stool and are able to transmit the virus to others. The incubation period for nonparalytic poliovirus infections is 3-6 days. For the onset of paralysis in paralytic cases, the incubation period is usually 7-21 days.

Epidemiology

Transmission of wild poliovirus was interrupted in the United States in 1979, or possibly earlier. A polio eradication program conducted by the Pan American Health Organization led to elimination of polio in the Western Hemisphere in 1991. The Global Polio Eradication Program has dramatically reduced poliovirus transmission throughout the world. In 2014, only 359 confirmed cases of polio were reported worldwide. Currently, polio remains endemic in two countries: Afghanistan and Pakistan.

Inactivated poliovirus vaccine (IPV) was licensed in 1955 and was used extensively from that time until the early 1960s. In 1961, type 1 and 2 monovalent oral poliovirus vaccine (MOPV) was licensed, and in 1962, type 3 MOPV was licensed. In 1963, trivalent OPV was licensed and largely replaced IPV use. Trivalent OPV was the vaccine of choice in the United States and most other countries of the world after its introduction in 1963. OPV can cause vaccine-associated paralytic polio (VAPP), and from 1980-1999, an average of seven cases of VAPP occurred each year in the United States. To eliminate VAPP from the U.S., OPV was replaced by IPV in the United States in 2000.

Surveillance Case Definitions (2010)

California healthcare providers and laboratories are required to report known or suspected cases of poliovirus infection to the LHJ, in accordance with Title 17 of the California Code of Regulations. The LHJs report all probable and confirmed poliovirus infection cases to CDPH using the following case definition:

Case Definition (Nonparalytic poliovirus infection)

Case Classification

Confirmed:
Any person without symptoms of paralytic poliomyelitis in whom a poliovirus isolate was identified in an appropriate clinical specimen, with confirmatory typing and sequencing performed by the CDC Poliovirus Laboratory, as needed.

Case Definition (Paralytic poliovirus infection)

Case Classification

Confirmed:

- Acute onset of a flaccid paralysis of one or more limbs with decreased or absent tendon reflexes in the affected limbs, without other apparent cause, and without sensory or cognitive loss; AND in which the patient has:
- A neurologic deficit 60 days after onset of initial symptoms; OR
- Died; OR
- Unknown follow-up status.

Probable:

Acute onset of a flaccid paralysis of one or more limbs with decreased or absent tendon reflexes in the affected limbs, without other apparent cause, and without sensory or cognitive loss.

Epidemiologic Summary

No cases of poliovirus infection were reported in California in 2014. There has been no indigenous transmission of wild poliovirus in California since at least 1978. The last imported wild poliovirus case in California was in 1986 and the last indigenous vaccine-associated paralytic poliomyelitis (VAPP) case in California was in 1998.

For more information about poliovirus infection, please visit the CDPH Polio Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/Polio.aspx).

Rubella and Congenital Rubella Syndrome

Background

Rubella was declared no longer endemic in the U.S. in 2004. However outbreaks continue to occur in parts of the world where rubella immunization rates are low. Notably, large rubella outbreaks occurred in Japan and Poland in 2013. In the first four months of 2013, over 21,000 cases of rubella were reported in Poland; 81% of cases were among 15-29 year old males. This outbreak reflects immunization policies in Poland where only adolescent girls were immunized from 1992-2003, leading to a large cohort of susceptible males. A report describing the outbreak of rubella among young male adults in Poland can be found at http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20485.

The Advisory Committee on Immunization Practices (ACIP) recommends one dose of rubella containing vaccine, administered as MMR vaccine in the U.S., at 12-15 months as part of the routine childhood vaccination schedule. A second dose of rubella vaccine is typically administered at 4-6 years of age as part of MMR vaccine. After one dose of vaccine approximately 95% - 99% of people will be protected against rubella.

Symptoms of rubella are often mild and up to 50% of infections are subclinical. However, when rubella infection occurs during pregnancy, especially during the first trimester, serious consequences can result. These include miscarriages, fetal deaths/stillbirths, and a constellation of severe birth defects known as congenital rubella syndrome (CRS). The most common congenital defects are cataracts, heart defects, and hearing impairment.

Rubella Surveillance Case Definition (2013)

California healthcare providers are required to report known or suspected cases of rubella to the LHJ, in accordance with Title 17 of the California Code of Regulations using the following case definition:

Case Classification

Confirmed:

- A case with or without symptoms who has laboratory evidence of rubella infection confirmed by one or more of the following laboratory tests:
  - Isolation of rubella virus; OR
  - Detection of rubella-virus specific nucleic acid by polymerase chain reaction; OR
  - Significant rise between acute- and convalescent-phase titers in serum rubella immunoglobulin G antibody level by any standard serologic assay; OR
  - Positive serologic test for rubella immunoglobulin M (IgM) antibody;

OR

- An illness characterized by all of the following:
  - Acute onset of generalized maculopapular rash; AND
  - Temperature greater than 99.0°F or 37.2°C; AND
  - Arthralgia, arthritis, lymphadenopathy, or conjunctivitis; AND
  - Epidemiologic linkage to a laboratory-confirmed case of rubella.

Probable:

In the absence of a more likely diagnosis, an illness characterized by all of the following:

- Acute onset of generalized maculopapular rash; AND
- Temperature greater than 99.0°F or 37.2°C, if measured; AND
- Arthralgia, arthritis, lymphadenopathy, or conjunctivitis; AND
- Lack of epidemiologic linkage to a laboratory-confirmed case of rubella; AND

- Noncontributory or no serologic or virologic testing.

Suspected:
Any generalized rash illness of acute onset that does not meet the criteria for probable or confirmed rubella or any other illness.

Congenital Rubella Syndrome Case Definition (2010)

Case Classification

Confirmed:

- An infant with at least one symptom (listed above) that is clinically consistent with congenital rubella syndrome; and laboratory evidence of congenital rubella infection as demonstrated by:
  - Isolation of rubella virus; OR
  - Detection of rubella-specific immunoglobulin M (IgM) antibody; OR
  - Infant rubella antibody level that persists at a higher level and for a longer period than expected from passive transfer of maternal antibody (i.e., rubella titer that does not drop at the expected rate of a twofold dilution per month); OR
  - A specimen that is PCR positive for rubella virus

Probable:

- An infant without an alternative etiology that does not have laboratory confirmation of rubella infection but has at least 2 of the following*:
  - Cataracts or congenital glaucoma*;
  - Congenital heart disease (most commonly patent ductus arteriosus or peripheral pulmonary artery stenosis);
  - Hearing impairment; OR
  - Pigmentary retinopathy; **OR**
- An infant without an alternative etiology that does not have laboratory confirmation of rubella infection but has at least one or more of the following:
  - Cataracts or congenital glaucoma*;
  - Congenital heart disease (most commonly patent ductus arteriosus or peripheral pulmonary artery stenosis);
  - Hearing impairment; OR
  - Pigmentary retinopathy; **AND one or more of the following:**
  - Purpura;
  - Hepatosplenomegaly;
  - Jaundice;
  - Microcephaly;
  - Developmental delay;
  - Meningoencephalitis; OR
  - Radiolucent bone disease

Suspected:

- An infant that does not meet the criteria for a probable or confirmed case but who has one or more of the following clinical findings:
  - Cataracts or congenital glaucoma;
  - Congenital heart disease (most commonly patent ductus arteriosus or peripheral pulmonary artery stenosis);
  - Hearing impairment;
  - Pigmentary retinopathy;
  - Purpura;
  - Hepatosplenomegaly;
  - Jaundice;
  - Microcephaly;
  - Developmental delay;
  - Meningoencephalitis; OR
  - Radiolucent bone disease

*In probable cases, either or both of the eye-related findings (cataracts and congenital glaucoma) count as a single complication. In cases classified as infection only, if any compatible signs or symptoms (e.g., hearing loss) are identified later, the case is reclassified as confirmed.

Epidemiologic Summary

In 2014, there were two reports of rubella infection and no reports of congenital rubella syndrome.

Both rubella cases had international travel (India, Afghanistan) during the potential exposure period. One case was hospitalized for one night, and the second was seen in an emergency department and initially suspected to have measles. Both cases were confirmed with rubella by PCR testing. The last report of a congenital rubella syndrome case in California occurred in 2008.

For more information about rubella, please visit the CDPH Rubella Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/Rubella.aspx).

Tetanus

Background

Tetanus, commonly called "lockjaw", is caused by a toxin produced by the gram-positive spore-forming bacterium *Clostridium tetani*. People with tetanus infection experience severe muscle spasms and stiffness, leading to "locking" of the jaw. C. *tetani* are present worldwide and are commonly found in soil, dust, and manure. Infection primarily occurs when the bacteria enter the body through cuts or wounds. Tetanus is not transmitted from person-to-person. The incubation period for tetanus is typically 10 days (range: 3-21 days). In general, the further the wound or injury site is from the central nervous system, the longer the incubation period will be.

Everyone should receive tetanus toxoid vaccine. The DTaP (diphtheria, tetanus, and acellular pertussis), Td (tetanus, diphtheria), and Tdap (tetanus, diphtheria, and acellular pertussis) vaccines all protect against tetanus. Children need four doses of DTaP by 15 months and a Tdap booster at age 11 or 12. Adults need a booster every 10 years after the primary series has been completed. The Tdap vaccine is recommended for one of the booster doses.

Since the introduction of tetanus vaccines in the 1930s and 1940s, the number of tetanus cases reported in the U.S. each year has declined significantly. However, sporadic cases continue to be reported in adults, especially in those who are not up to date on their tetanus booster vaccinations. In California, a total of 52 tetanus cases were reported from 2004 through 2014, with an average annual incidence rate of 0.01 cases per 100,000 population.

Surveillance Case Definition (2010)

California healthcare providers are required to report known or suspected cases of tetanus to the LHJ, in accordance with Title 17 of the California Code of Regulations. The LHJs report all probable tetanus cases to CDPH using the following case definition:

Case Classification

Probable:

- In the absence of a more likely diagnosis, an acute illness with muscle spasms or hypertonia AND diagnosis of tetanus by a healthcare provider; OR
- Death, with tetanus listed on the death certificate as the cause of death or a significant condition contributing to death

Epidemiologic Summary

Four probable tetanus cases were reported in California in 2014 in the following local health jurisdictions: Imperial (1), Long Beach City (1), and Orange (2). The median age of the four patients was 50 years (range: 45–56); three (75%) were male. All four patients were hospitalized; one died.

All four patients reported an acute injury prior to illness onset; two had wounds related to injection-drug use, which is associated with increased risk for tetanus, one received a puncture wound while gardening, and one received an abrasion while working with plumbing. Tetanus vaccination status was unknown for all four patients. Of three (75%) patients who sought medical care for their injuries, one received tetanus toxoid vaccine for postexposure prophylaxis.

For more information about tetanus, please visit the CDPH Tetanus Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/Tetanus.aspx).

Varicella Hospitalizations and Deaths

Background

Varicella (chickenpox) is caused by varicella zoster virus (VZV), which is a DNA virus and a member of the herpes virus group. After primary infection, VZV persists in the sensory nerve ganglia and may reactivate later in life and cause herpes zoster (shingles). Primary varicella infection results in a generalized, pruritic, maculo-papulovesicular rash that typically presents first on the head, then the trunk and then the extremities. Lesions develop in successive crops over several days and eventually crust over. A mild prodrome of 1 to 2 days prior to the rash can also occur, especially in adults, and usually consists of fever and malaise. Herpes zoster is characterized by a painful rash of grouped vesicular lesions congregating within 1 to 3 dermatomes. Herpes zoster primarily occurs in older adults and is uncommon and usually milder in children.

Infection with VZV occurs when the virus comes into contact with the mucosa of the upper respiratory tract or conjunctiva of a susceptible person. VZV is transmitted via the airborne route from varicella and herpes zoster vesicles as well as from respiratory tract secretions. There is no evidence of VZV spread from fomites. The incubation period for varicella is 10 to 21 days with symptoms typically occurring 14 to 16 days after exposure.

Pregnant women who become infected with varicella are at risk for serious complications including pneumonia, and in some cases, may die as a result of varicella. If a pregnant woman is infected with varicella in her 1st or early 2nd trimester, her infant has a small risk (0.4 – 2.0 percent) of being born with congenital varicella syndrome and may have scarring on the skin, abnormalities in limbs, brain, and eyes, and low birth weight. If a woman develops varicella rash from 5 days before to 2 days after delivery, the newborn will be at risk for neonatal varicella. In the absence of treatment, up to 30% of these newborns may develop severe disease.

Varicella tends to be more severe in infants, teens, and adults than in young children. Immunocompromised persons have a high risk of disseminated disease. Complications of varicella include secondary bacterial infections, pneumonia, and central nervous system manifestations such as meningitis and encephalitis. Before the vaccine was introduced in the U.S. in 1995, an average of 103 persons died each year and approximately 11,000 persons were hospitalized due to varicella. The varicella hospitalization and death rate has decreased more than 90% since the vaccine was introduced.

Surveillance Case Definition (2010)

California healthcare providers are required to report known or suspected varicella hospitalizations and deaths to the LHJ, in accordance with Title 17 of the California Code of Regulations. The LHJs report all confirmed and probable cases to CDPH using the following case definition:

Case Classification

Confirmed:

- An acute illness with diffuse (generalized) maculo-papulovesicular rash, AND epidemiologic linkage to another probable or confirmed case; OR
- An acute illness with diffuse (generalized) maculo-papulovesicular rash, AND laboratory confirmation by any of the following:
  - Isolation of varicella-zoster virus (VZV) from a clinical specimen; OR
  - Varicella antigen detected by direct fluorescent antibody test (DFA); OR

- Varicella-specific nucleic acid detected by polymerase chain reaction (PCR); OR
- Significant rise in serum anti-varicella immunoglobulin G (IgG) antibody level by any serologic assay.

Probable:

- An acute illness with diffuse (generalized) maculo-papulovesicular rash; AND
- Lack of laboratory confirmation; AND
- Lack of epidemiologic linkage to another probable or confirmed case.

Epidemiologic Summary

In 2014, a total of 41 probable and confirmed varicella-associated hospitalizations were reported statewide in 16 (26%) of 61 LHJs (Table 17). The statewide incidence of reported varicella hospitalizations in 2014 was 0.11 cases per 100,000 population. This was an increase from 2013 when 32 cases were reported in 16 (26%) of 61 LHJs at a rate of 0.08 cases per 100,000 population. There were fewer outbreaks, which are defined by CDPH as the occurrence of ≥5 varicella cases that are related in place and epidemiologically linked, reported in the state in 2014 (2) than in 2013 (8) [Figure 8]. Both outbreaks occurred in schools. There were no reported deaths in 2014.

Of the 41 hospitalized cases in 2014, 12 (29%) were in children under 18, 7 of whom were less than 1 year of age (Figure 9). The median age of all hospitalized cases in 2014 was 31 years (range:10 days - 74 years). Among 23 (56%) cases with known vaccination status, 16 (70%) were old enough to be vaccinated with at least one dose of varicella vaccine, however, only four had received varicella vaccine prior to becoming ill. Of these, three had only one dose of the vaccine.

The highest proportion of varicella hospitalizations was among Hispanic persons (12; 29%), followed by non-Hispanic whites (11; 27%), Asians or Pacific Islanders (4; 10%), non-Hispanic blacks (4; 10%) and persons of other race/ethnicity (2; 5%) [Figure 10]. There were 8 (20%) persons with unknown race/ethnicity. More males (23; 56%) were hospitalized with varicella than females (18; 44%). Of the 38 cases with sufficient medical record information to assess immune status, 12 (32%) were immunocompromised.

For more information about varicella, please visit the CDPH Varicella Webpage (http://www.cdph.ca.gov/HealthInfo/discond/Pages/Varicella.aspx).

Table 17. Reported varicella hospitalizations by local health jurisdiction – California, 2013–2014

	2013	2014
CALIFORNIA	32	41
Alameda*	1	5
City of Berkeley*	0	0
Alpine	0	0
Amador	0	0
Butte	0	0
Calaveras	0	0
Colusa	0	0
Contra Costa	3	1
Del Norte	0	0
El Dorado	0	0
Fresno	2	5
Glenn	0	0
Humboldt	0	1
Imperial	0	0
Inyo	0	0
Kern	0	1
Kings	0	0
Lake	0	0
Lassen	0	0
Los Angeles*	8	9
City of Long Beach*	0	0
City of Pasadena*	1	0
Madera	0	0
Marin	0	0
Mariposa	0	0
Mendocino	0	0
Merced	0	0
Modoc	0	0
Mono	0	0
Monterey	0	0
Napa	0	0
Nevada	0	0
Orange	4	4
Placer	0	0
Plumas	0	0
Riverside	2	3
Sacramento	1	1
San Benito	0	0
San Bernardino	1	3
San Diego	2	2
San Francisco	2	1
San Joaquin	0	2
San Luis Obispo	0	1
San Mateo	1	0
Santa Barbara	1	0
Santa Clara	1	0
Santa Cruz	0	0
Shasta	0	0
Sierra	0	0
Siskiyou	0	0
Solano	1	0
Sonoma	0	1
Stanislaus	0	0
Sutter	0	0
Tehama	0	0
Trinity	0	0
Tulare	0	1
Tuolumne	1	0
Ventura	0	0
Yolo	0	0
Yuba	0	0

*City health jurisdictions not included in county total.

Figure 8. Varicella hospitalizations, deaths, and outbreaks – California, 2012–2014

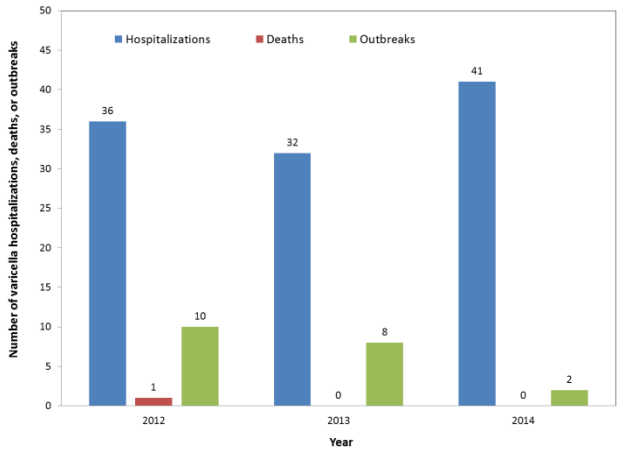


Figure 9. Varicella hospitalizations and deaths by age group – California, 2014

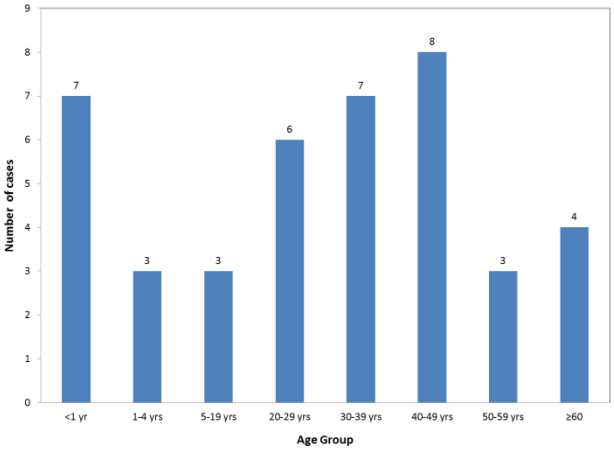
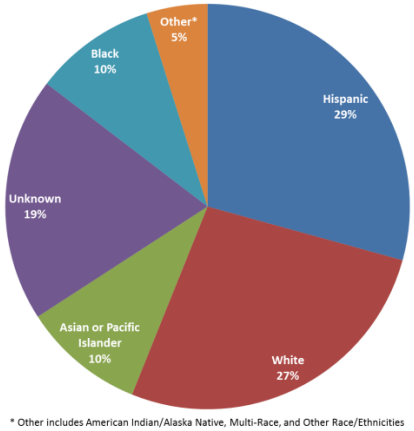


Figure 10. Varicella hospitalizations and deaths by race/ethnicity – California, 2014



VACCINE-PREVENTABLE DISEASE SUMMARY TABLES

Table 18. Invasive *Haemophilus influenzae* infection cases <15 years of age, by local health jurisdiction and year of disease onset – California, 2010–2014

	2010		2011		2012		2013		2014	
	All types	Hib	All types	Hib	All types	Hib	All types	Hib	All types	Hib
CALIFORNIA	30	0	42	1	32	0	46	0	40	0
Alameda	0	0	3	0	3	0	1	0	2	0
City of Berkeley*	0	0	0	0	0	0	0	0	0	0
Alpine	0	0	0	0	0	0	0	0	0	0
Amador	0	0	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0	1	0
Calaveras	0	0	0	0	0	0	0	0	0	0
Colusa	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0
Del Norte	0	0	0	0	0	0	0	0	0	0
El Dorado	0	0	0	0	0	0	0	0	1	0
Fresno	2	0	1	0	1	0	6	0	3	0
Glenn	0	0	0	0	0	0	0	0	0	0
Humboldt	0	0	0	0	0	0	0	0	0	0
Imperial	0	0	0	0	0	0	0	0	0	0
Inyo	0	0	0	0	0	0	0	0	0	0
Kern	0	0	0	0	1	0	1	0	1	0
Kings	0	0	0	0	0	0	0	0	0	0
Lake	0	0	0	0	0	0	0	0	0	0
Lassen	0	0	0	0	0	0	0	0	0	0
Los Angeles	6	0	14	0	7	0	12	0	8	0
City of Long Beach*	0	0	0	0	0	0	0	0	2	0
City of Pasadena*	0	0	0	0	0	0	0	0	0	0
Madera	1	0	0	0	0	0	0	0	0	0
Marin	0	0	0	0	0	0	1	0	0	0
Mariposa	0	0	0	0	0	0	0	0	0	0
Mendocino	0	0	2	0	0	0	0	0	0	0
Merced	1	0	0	0	0	0	0	0	0	0
Modoc	0	0	0	0	0	0	0	0	0	0
Mono	0	0	0	0	0	0	0	0	0	0
Monterey	1	0	2	0	1	0	0	0	0	0
Napa	0	0	1	0	0	0	0	0	1	0
Nevada	0	0	0	0	0	0	0	0	0	0
Orange	0	0	1	0	1	0	0	0	1	0
Placer	0	0	0	0	0	0	0	0	0	0
Plumas	0	0	0	0	0	0	0	0	0	0
Riverside	2	0	2	0	2	0	5	0	3	0
Sacramento	6	0	2	0	1	0	5	0	1	0
San Benito	1	0	0	0	0	0	0	0	0	0
San Bernardino	4	0	3	0	2	0	2	0	2	0
San Diego	2	0	3	1	4	0	1	0	3	0
San Francisco	0	0	0	0	1	0	0	0	2	0
San Joaquin	0	0	0	0	2	0	1	0	0	0
San Luis Obispo	0	0	0	0	0	0	0	0	2	0
San Mateo	0	0	2	0	1	0	1	0	0	0
Santa Barbara	0	0	1	0	0	0	2	0	1	0
Santa Clara	2	0	1	0	1	0	2	0	4	0
Santa Cruz	0	0	0	0	0	0	0	0	0	0
Shasta	0	0	0	0	0	0	0	0	0	0
Sierra	0	0	0	0	0	0	0	0	0	0
Siskiyou	1	0	0	0	1	0	0	0	0	0
Solano	0	0	0	0	0	0	0	0	0	0
Sonoma	0	0	0	0	0	0	0	0	0	0
Stanislaus	0	0	2	0	0	0	2	0	0	0
Sutter	0	0	0	0	0	0	0	0	0	0
Tehama	0	0	0	0	0	0	0	0	1	0
Trinity	0	0	0	0	0	0	0	0	0	0
Tulare	0	0	2	0	2	0	1	0	1	0
Tuolumne	0	0	0	0	0	0	0	0	0	0
Ventura	1	0	0	0	1	0	2	0	0	0
Yolo	0	0	0	0	0	0	1	0	0	0
Yuba	0	0	0	0	0	0	0	0	0	0

* City health jurisdictions not included in county total.

Table 19. Hepatitis A infection cases and incidence rates per 100,000 population, by local health jurisdiction and year of disease onset – California, 2010–2014

	2010		2011		2012		2013		2014	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
CALIFORNIA	217	0.58	161	0.43	210	0.55	255	0.67	142	0.37
Alameda	8	0.57	6	0.43	2	0.14	6	0.41	9	0.61
City of Berkeley*	0	0.00	0	0.00	1	0.87	1	0.86	0	0.00
Alpine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Amador	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Butte	1	0.45	1	0.45	0	0.00	0	0.00	2	0.89
Calaveras	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Colusa	0	0.00	0	0.00	0	0.00	1	4.63	0	0.00
Contra Costa	3	0.29	2	0.19	5	0.47	10	0.92	3	0.27
Del Norte	3	10.51	0	0.00	0	0.00	0	0.00	0	0.00
El Dorado	1	0.55	0	0.00	1	0.55	5	2.73	0	0.00
Fresno	7	0.75	1	0.11	3	0.32	3	0.31	0	0.00
Glenn	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Humboldt	1	0.74	0	0.00	1	0.74	3	2.23	1	0.74
Imperial	4	2.28	2	1.13	5	2.81	0	0.00	0	0.00
Inyo	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Kern	0	0.00	6	0.71	5	0.58	4	0.46	3	0.34
Kings	1	0.65	0	0.00	1	0.66	0	0.00	0	0.00
Lake	1	1.55	0	0.00	1	1.55	1	1.55	1	1.54
Lassen	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Los Angeles	56	0.61	44	0.48	47	0.50	60	0.64	42	0.44
City of Long Beach*	0	0.00	0	0.00	1	0.21	6	1.28	5	1.06
City of Pasadena*	0	0.00	0	0.00	0	0.00	0	0.00	3	2.12
Madera	3	1.98	0	0.00	0	0.00	1	0.65	0	0.00
Marin	0	0.00	2	0.79	1	0.39	0	0.00	1	0.39
Mariposa	0	0.00	0	0.00	0	0.00	1	5.41	0	0.00
Mendocino	2	2.27	1	1.14	0	0.00	2	2.26	0	0.00
Merced	0	0.00	1	0.39	2	0.77	0	0.00	0	0.00
Modoc	0	0.00	0	0.00	0	0.00	1	10.79	0	0.00
Mono	0	0.00	0	0.00	0	0.00	0	0.00	1	6.87
Monterey	1	0.24	2	0.48	0	0.00	2	0.47	0	0.00
Napa	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Nevada	2	2.03	0	0.00	1	1.02	2	2.04	1	1.02
Orange	19	0.63	16	0.53	25	0.81	24	0.77	14	0.45
Placer	2	0.57	0	0.00	1	0.28	0	0.00	0	0.00
Plumas	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Riverside	17	0.78	4	0.18	10	0.44	9	0.40	7	0.30
Sacramento	2	0.14	4	0.28	7	0.49	5	0.35	3	0.21
San Benito	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
San Bernardino	4	0.20	8	0.39	5	0.24	10	0.48	2	0.10
San Diego	19	0.61	12	0.38	38	1.20	40	1.26	14	0.44
San Francisco	8	0.99	5	0.61	5	0.61	4	0.48	3	0.36
San Joaquin	6	0.87	4	0.58	4	0.57	3	0.43	2	0.28
San Luis Obispo	1	0.37	0	0.00	4	1.48	2	0.74	0	0.00
San Mateo	7	0.97	8	1.10	1	0.14	9	1.21	1	0.13
Santa Barbara	2	0.47	1	0.23	1	0.23	1	0.23	2	0.46
Santa Clara	14	0.78	12	0.66	9	0.49	7	0.38	10	0.53
Santa Cruz	0	0.00	3	1.13	2	0.74	7	2.58	3	1.10
Shasta	1	0.56	1	0.56	0	0.00	3	1.68	2	1.12
Sierra	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Siskiyou	0	0.00	1	2.23	1	2.20	1	2.21	0	0.00
Solano	12	2.90	2	0.48	2	0.48	3	0.71	0	0.00
Sonoma	3	0.62	1	0.21	2	0.41	2	0.41	1	0.20
Stanislaus	1	0.19	2	0.39	2	0.38	4	0.76	3	0.57
Sutter	3	3.17	1	1.06	0	0.00	0	0.00	0	0.00
Tehama	2	3.15	0	0.00	0	0.00	0	0.00	0	0.00
Trinity	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Tulare	0	0.00	4	0.89	0	0.00	4	0.88	1	0.22
Tuolumne	0	0.00	0	0.00	1	1.85	0	0.00	0	0.00
Ventura	0	0.00	3	0.36	13	1.56	7	0.83	2	0.24
Yolo	0	0.00	1	0.49	0	0.00	1	0.48	0	0.00
Yuba	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

* City health jurisdictions not included in county total.

Table 20. Acute hepatitis B infection cases and incidence rates per 100,000 population, by local health jurisdiction and year of disease onset – California, 2010–2014

	2010		2011		2012		2013		2014	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
CALIFORNIA	214	0.57	155	0.41	141	0.37	139	0.36	108	0.28
Alameda	3	0.21	5	0.35	6	0.42	6	0.41	5	0.34
City of Berkeley*	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Alpine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Amador	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Butte	3	1.36	3	1.36	2	0.91	2	0.90	1	0.45
Calaveras	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Colusa	1	4.65	1	4.65	0	0.00	0	0.00	0	0.00
Contra Costa	1	0.10	0	0.00	2	0.19	2	0.18	2	0.18
Del Norte	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
El Dorado	1	0.55	0	0.00	1	0.55	0	0.00	0	0.00
Fresno	4	0.43	4	0.43	2	0.21	4	0.42	3	0.31
Glenn	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Humboldt	2	1.49	0	0.00	1	0.74	0	0.00	0	0.00
Imperial	0	0.00	0	0.00	0	0.00	2	1.12	1	0.55
Inyo	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Kern	10	1.19	2	0.24	10	1.17	3	0.35	3	0.34
Kings	2	1.31	1	0.66	0	0.00	0	0.00	0	0.00
Lake	2	3.10	1	1.55	0	0.00	0	0.00	1	1.54
Lassen	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Los Angeles	46	0.50	57	0.62	39	0.42	54	0.57	40	0.42
City of Long Beach*	4	0.86	0	0.00	0	0.00	4	0.85	3	0.64
City of Pasadena*	2	1.46	1	0.72	1	0.71	3	2.13	1	0.71
Madera	25	16.52	2	1.32	0	0.00	2	1.31	1	0.65
Marin	0	0.00	0	0.00	1	0.39	0	0.00	0	0.00
Mariposa	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Mendocino	3	3.41	1	1.14	0	0.00	0	0.00	0	0.00
Merced	0	0.00	3	1.16	0	0.00	0	0.00	0	0.00
Modoc	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Mono	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Monterey	0	0.00	0	0.00	4	0.95	0	0.00	0	0.00
Napa	0	0.00	0	0.00	0	0.00	1	0.72	0	0.00
Nevada	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Orange	9	0.30	12	0.39	7	0.23	12	0.39	7	0.22
Placer	2	0.57	1	0.28	0	0.00	2	0.55	0	0.00
Plumas	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Riverside	10	0.46	5	0.23	17	0.76	3	0.13	4	0.17
Sacramento	4	0.28	5	0.35	5	0.35	4	0.28	0	0.00
San Benito	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
San Bernardino	16	0.78	8	0.39	12	0.58	7	0.34	9	0.43
San Diego	10	0.32	19	0.61	14	0.44	9	0.28	7	0.22
San Francisco	8	0.99	7	0.86	2	0.24	4	0.48	0	0.00
San Joaquin	5	0.73	2	0.29	3	0.43	2	0.28	4	0.56
San Luis Obispo	0	0.00	0	0.00	1	0.37	0	0.00	1	0.37
San Mateo	2	0.28	3	0.41	1	0.14	2	0.27	1	0.13
Santa Barbara	0	0.00	2	0.47	1	0.23	1	0.23	1	0.23
Santa Clara	19	1.06	7	0.39	5	0.27	4	0.22	4	0.21
Santa Cruz	1	0.38	0	0.00	0	0.00	0	0.00	1	0.37
Shasta	4	2.25	0	0.00	0	0.00	1	0.56	1	0.56
Sierra	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Siskiyou	0	0.00	0	0.00	0	0.00	0	0.00	1	2.21
Solano	1	0.24	0	0.00	0	0.00	0	0.00	0	0.00
Sonoma	1	0.21	0	0.00	0	0.00	0	0.00	1	0.20
Stanislaus	5	0.97	2	0.39	1	0.19	5	0.95	2	0.38
Sutter	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Tehama	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Trinity	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Tulare	0	0.00	0	0.00	2	0.44	0	0.00	3	0.65
Tuolumne	2	3.63	0	0.00	0	0.00	0	0.00	0	0.00
Ventura	5	0.61	0	0.00	1	0.12	0	0.00	0	0.00
Yolo	1	0.50	0	0.00	0	0.00	0	0.00	0	0.00
Yuba	0	0.00	1	1.38	0	0.00	0	0.00	0	0.00

* City health jurisdictions not included in county total.

Table 21. Confirmed measles cases, by local health jurisdiction† and year of disease onset – California, 2010–2014

	2010	2011	2012	2013	2014
CALIFORNIA	27	32	8	18	75
Alameda	2	0	0	0	5
City of Berkeley*	0	1	0	1	1
Alpine	0	0	0	0	0
Amador	1	0	0	0	0
Butte	0	0	0	0	0
Calaveras	0	0	0	0	0
Colusa	0	0	0	0	0
Contra Costa	1	0	0	0	4
Del Norte	0	0	0	0	0
El Dorado	0	0	0	0	0
Fresno	0	0	0	0	0
Glenn	0	0	0	0	0
Humboldt	0	1	0	0	1
Imperial	0	0	0	0	0
Inyo	0	0	0	0	0
Kern	0	0	0	0	0
Kings	0	0	0	0	0
Lake	0	0	0	0	0
Lassen	0	0	0	0	0
Los Angeles	8	7	6	3	13
City of Long Beach*	0	1	0	0	0
City of Pasadena*	0	0	0	0	1
Madera	0	0	0	0	0
Marin	0	0	0	0	0
Mariposa	0	0	0	0	0
Mendocino	0	3	0	1	0
Merced	0	2	0	0	0
Modoc	0	0	0	0	0
Mono	0	0	0	0	0
Monterey	0	0	0	1	2
Napa	0	0	0	0	0
Nevada	0	0	0	0	0
Orange	2	1	0	2	24
Placer	0	0	0	0	0
Plumas	0	0	0	0	0
Riverside	0	1	1	1	6
Sacramento	0	1	0	0	0
San Benito	0	1	0	0	0
San Bernardino	1	0	0	0	1
San Diego	5	4	0	2	6
San Francisco	2	0	0	3	0
San Joaquin	0	0	0	0	1
San Luis Obispo	0	1	0	0	0
San Mateo	0	1	1	0	4
Santa Barbara	0	0	0	0	0
Santa Clara	5	4	0	0	2
Santa Cruz	0	0	0	3	0
Shasta	0	0	0	0	1
Sierra	0	0	0	0	0
Siskiyou	0	0	0	0	0
Solano	0	0	0	0	0
Sonoma	0	1	0	0	0
Stanislaus	0	1	0	0	0
Sutter	0	0	0	0	0
Tehama	0	0	0	0	0
Trinity	0	0	0	0	0
Tulare	0	0	0	0	0
Tuolumne	0	0	0	0	0
Ventura	0	0	0	1	3
Yolo	0	0	0	0	0
Yuba	0	1	0	0	0

† County of residence or county where case was identified.

* City health jurisdictions not included in county total.

Table 22. Invasive meningococcal disease cases and incidence rates per 100,000 population, by local health jurisdiction and year of disease onset – California, 2010–2014

	2010		2011		2012		2013		2014	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
CALIFORNIA	121	0.32	110	0.29	88	0.23	111	0.29	56	0.15
Alameda	2	0.14	3	0.21	8	0.56	5	0.35	5	0.34
City of Berkeley*	0	0.00	1	0.87	2	1.73	0	0.00	0	0.00
Alpine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Amador	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Butte	2	0.91	1	0.45	1	0.45	0	0.00	0	0.00
Calaveras	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Colusa	0	0.00	0	0.00	0	0.00	1	4.62	0	0.00
Contra Costa	3	0.29	3	0.28	2	0.19	4	0.37	1	0.09
Del Norte	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
El Dorado	0	0.00	0	0.00	0	0.00	0	0.00	1	0.54
Fresno	6	0.64	2	0.21	6	0.63	4	0.42	2	0.21
Glenn	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Humboldt	4	2.97	0	0.00	0	0.00	0	0.00	0	0.00
Imperial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Inyo	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Kern	7	0.83	5	0.59	9	1.05	1	0.12	4	0.46
Kings	1	0.65	0	0.00	0	0.00	0	0.00	0	0.00
Lake	0	0.00	0	0.00	1	1.56	0	0.00	1	1.54
Lassen	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Los Angeles	26	0.28	37	0.40	12	0.13	18	0.19	12	0.13
City of Long Beach*	1	0.22	0	0.00	0	0.00	1	0.21	0	0.00
City of Pasadena*	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Madera	1	0.66	1	0.66	1	0.66	3	1.96	0	0.00
Marin	1	0.40	0	0.00	0	0.00	2	0.78	0	0.00
Mariposa	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Mendocino	0	0.00	0	0.00	2	2.26	3	3.40	1	1.13
Merced	0	0.00	0	0.00	0	0.00	3	1.14	0	0.00
Modoc	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Mono	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Monterey	1	0.24	0	0.00	0	0.00	1	0.24	1	0.24
Napa	2	1.46	0	0.00	0	0.00	0	0.00	0	0.00
Nevada	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Orange	8	0.27	10	0.33	4	0.13	5	0.16	3	0.10
Placer	0	0.00	1	0.28	0	0.00	0	0.00	0	0.00
Plumas	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Riverside	2	0.09	7	0.32	2	0.09	3	0.13	2	0.09
Sacramento	7	0.49	3	0.21	6	0.42	4	0.28	4	0.27
San Benito	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
San Bernardino	4	0.20	3	0.15	2	0.10	9	0.43	1	0.05
San Diego	11	0.35	4	0.13	8	0.25	15	0.47	9	0.28
San Francisco	1	0.12	8	0.98	4	0.49	4	0.48	2	0.24
San Joaquin	2	0.29	2	0.29	2	0.29	1	0.14	0	0.00
San Luis Obispo	0	0.00	0	0.00	2	0.74	0	0.00	0	0.00
San Mateo	5	0.69	1	0.14	2	0.27	1	0.13	1	0.13
Santa Barbara	3	0.71	2	0.47	1	0.23	6	1.39	0	0.00
Santa Clara	4	0.22	5	0.28	3	0.16	3	0.16	4	0.21
Santa Cruz	1	0.38	0	0.00	0	0.00	2	0.74	0	0.00
Shasta	2	1.13	3	1.69	1	0.56	1	0.56	0	0.00
Sierra	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Siskiyou	0	0.00	1	2.23	1	2.21	1	2.21	0	0.00
Solano	2	0.48	1	0.24	0	0.00	0	0.00	1	0.23
Sonoma	3	0.62	1	0.21	0	0.00	3	0.61	0	0.00
Stanislaus	0	0.00	0	0.00	1	0.19	0	0.00	0	0.00
Sutter	0	0.00	0	0.00	0	0.00	2	2.07	0	0.00
Tehama	4	6.30	4	6.30	1	1.56	0	0.00	0	0.00
Trinity	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Tulare	1	0.23	0	0.00	1	0.22	3	0.66	1	0.22
Tuolumne	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ventura	4	0.48	0	0.00	3	0.36	1	0.12	0	0.00
Yolo	0	0.00	1	0.49	0	0.00	1	0.49	0	0.00
Yuba	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

* City health jurisdictions not included in county total.

Table 23. Confirmed and probable mumps cases, by local health jurisdiction and year of disease onset – California, 2010–2014

	2010	2011	2012†	2013	2014
CALIFORNIA	29	43	34	30	37
Alameda	1	2	1	1	1
City of Berkeley*	0	24	0	0	0
Alpine	0	0	0	0	0
Amador	0	0	0	0	0
Butte	0	0	1	0	1
Calaveras	0	0	0	1	0
Colusa	0	0	0	0	0
Contra Costa	0	2	0	2	1
Del Norte	0	0	0	0	0
El Dorado	0	0	0	0	0
Fresno	0	0	0	1	1
Glenn	0	0	0	0	0
Humboldt	0	0	1	0	0
Imperial	0	0	0	0	0
Inyo	0	0	0	0	0
Kern	1	0	0	0	0
Kings	0	0	0	0	0
Lake	0	0	0	0	0
Lassen	0	0	0	0	0
Los Angeles	20	3	13	9	9
City of Long Beach*	0	2	1	0	0
City of Pasadena*	0	0	0	0	1
Madera	0	0	0	0	0
Marin	0	0	1	0	0
Mariposa	0	0	0	0	0
Mendocino	0	0	0	0	0
Merced	0	0	0	0	0
Modoc	0	0	0	0	0
Mono	0	0	0	0	0
Monterey	0	0	1	0	0
Napa	0	0	0	0	0
Nevada	0	0	0	0	0
Orange	0	3	3	2	8
Placer	0	0	1	1	0
Plumas	0	0	0	0	0
Riverside	1	0	1	2	4
Sacramento	0	0	2	0	1
San Benito	0	0	0	0	0
San Bernardino	0	0	0	1	3
San Diego	0	1	1	2	2
San Francisco	0	3	0	2	0
San Joaquin	0	1	0	1	0
San Luis Obispo	0	0	0	0	0
San Mateo	0	0	1	1	0
Santa Barbara	0	1	1	1	0
Santa Clara	1	1	3	0	1
Santa Cruz	0	0	0	0	1
Shasta	0	0	0	0	0
Sierra	0	0	0	0	0
Siskiyou	0	0	0	0	0
Solano	0	0	2	0	0
Sonoma	0	0	0	0	0
Stanislaus	1	0	0	1	1
Sutter	0	0	0	0	0
Tehama	0	0	0	0	0
Trinity	0	0	0	0	0
Tulare	0	0	0	0	0
Tuolumne	1	0	0	0	0
Ventura	3	0	0	1	2
Yolo	0	0	0	1	0
Yuba	0	0	0	0	0

* City health jurisdictions not included in county total.

† In 2010, CSTE changed the mumps case definition.

Table 24. Pertussis disease cases and incidence rates per 100,000 population, by local health jurisdiction and year of disease onset – California, 2010–2014

	2010		2011		2012		2013		2014	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
CALIFORNIA	9159	24.55	3016	8.03	1023	2.70	2537	6.65	11213	29.13
Alameda	423	30.21	206	14.59	62	4.35	124	8.57	364	24.83
City of Berkeley*	13	11.51	3	2.62	6	5.20	13	11.13	56	47.39
Alpine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Amador	4	10.56	11	29.48	1	2.75	2	5.55	1	2.77
Butte	32	14.55	16	7.26	3	1.36	33	14.90	33	14.74
Calaveras	9	19.80	5	11.08	0	0.00	2	4.46	17	37.71
Colusa	11	51.20	1	4.65	0	0.00	0	0.00	0	0.00
Contra Costa	205	19.48	114	10.74	24	2.24	69	6.38	478	43.59
Del Norte	16	56.06	0	0.00	0	0.00	0	0.00	2	7.09
El Dorado	54	29.85	11	6.09	3	1.64	4	2.19	36	19.57
Fresno	550	58.99	58	6.17	16	1.69	44	4.60	392	40.52
Glenn	1	3.55	1	3.54	0	0.00	0	0.00	1	3.48
Humboldt	58	43.07	15	11.10	1	0.74	5	3.71	149	110.69
Imperial	9	5.13	3	1.69	8	4.48	3	1.67	10	5.52
Inyo	8	43.17	0	0.00	1	5.38	0	0.00	0	0.00
Kern	376	44.70	49	5.77	2	0.23	31	3.58	166	19.03
Kings	26	17.03	7	4.61	0	0.00	2	1.33	16	10.68
Lake	5	7.74	3	4.66	2	3.12	3	4.67	3	4.63
Lassen	1	2.85	0	0.00	0	0.00	0	0.00	5	14.88
Los Angeles	1303	14.12	612	6.61	209	2.24	342	3.64	2000	21.15
City of Long Beach*	68	14.70	17	3.66	4	0.86	16	3.40	182	38.59
City of Pasadena*	24	17.54	15	10.79	1	0.71	2	1.42	22	15.57
Madera	120	79.30	8	5.26	0	0.00	10	6.54	47	30.46
Marin	351	138.90	26	10.22	5	1.97	184	71.94	272	105.29
Mariposa	10	54.96	1	5.56	0	0.00	0	0.00	0	0.00
Mendocino	27	30.71	3	3.41	0	0.00	6	6.80	10	11.29
Merced	131	51.19	27	10.42	0	0.00	1	0.38	9	3.40
Modoc	0	0.00	0	0.00	0	0.00	0	0.00	6	63.71
Mono	18	126.46	2	13.99	21	145.90	2	13.82	0	0.00
Monterey	132	31.71	38	9.05	17	4.03	49	11.56	129	30.33
Napa	25	18.27	11	7.99	6	4.35	13	9.36	137	97.61
Nevada	23	23.32	2	2.03	5	5.11	70	71.57	16	16.29
Orange	499	16.54	142	4.66	73	2.38	113	3.65	447	14.27
Placer	80	22.84	19	5.33	11	3.05	86	23.58	121	32.73
Plumas	2	10.05	4	20.05	0	0.00	1	5.05	1	5.08
Riverside	467	21.31	166	7.48	46	2.05	80	3.53	470	20.48
Sacramento	175	12.32	69	4.82	35	2.44	70	4.84	447	30.61
San Benito	7	12.65	3	5.36	1	1.77	1	1.75	11	18.97
San Bernardino	182	8.93	115	5.60	54	2.62	39	1.88	206	9.85
San Diego	1140	36.74	398	12.73	162	5.14	408	12.84	2019	62.85
San Francisco	141	17.49	70	8.60	30	3.65	59	7.10	130	15.52
San Joaquin	84	12.23	27	3.90	15	2.15	26	3.70	215	30.21
San Luis Obispo	371	137.57	15	5.56	14	5.17	17	6.26	45	16.46
San Mateo	191	26.54	58	7.97	23	3.12	104	14.01	129	17.24
Santa Barbara	66	15.57	18	4.23	11	2.58	28	6.48	120	27.49
Santa Clara	478	26.76	176	9.74	45	2.46	254	13.71	538	28.70
Santa Cruz	87	33.06	22	8.29	13	4.84	54	19.95	165	60.69
Shasta	32	18.03	27	15.17	2	1.12	7	3.93	33	18.49
Sierra	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Siskiyou	10	22.27	0	0.00	2	4.42	5	11.04	7	15.45
Solano	40	9.68	12	2.90	10	2.39	15	3.55	144	33.67
Sonoma	246	50.82	116	23.84	18	3.69	51	10.37	704	142.03
Stanislaus	159	30.86	43	8.30	11	2.10	16	3.04	92	17.35
Sutter	5	5.28	1	1.06	0	0.00	2	2.07	8	8.30
Tehama	10	15.75	1	1.58	0	0.00	0	0.00	38	59.17
Trinity	0	0.00	0	0.00	0	0.00	0	0.00	6	44.78
Tulare	230	51.91	77	17.20	27	5.97	25	5.49	37	8.06
Tuolumne	32	58.03	4	7.27	1	1.85	2	3.70	16	29.69
Ventura	372	45.09	163	19.64	15	1.80	36	4.29	348	41.22
Yolo	17	8.44	5	2.47	6	2.93	4	1.94	147	70.94
Yuba	3	4.15	0	0.00	1	1.37	4	5.48	10	13.62

* City health jurisdictions not included in county total.

Table 25. Confirmed rubella and congenital rubella syndrome (CRS) cases, by local health jurisdiction and year of disease onset – California, 2010–2014

	2010		2011		2012		2013		2014	
	Rubella	CRS	Rubella	CRS	Rubella	CRS	Rubella	CRS	Rubella	CRS
CALIFORNIA	1	0	0	0	1	0	0	0	2	0
Alameda	0	0	0	0	0	0	0	0	1	0
City of Berkeley*	0	0	0	0	0	0	0	0	0	0
Alpine	0	0	0	0	0	0	0	0	0	0
Amador	0	0	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0	0	0
Calaveras	0	0	0	0	0	0	0	0	0	0
Colusa	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0
Del Norte	0	0	0	0	0	0	0	0	0	0
El Dorado	0	0	0	0	0	0	0	0	0	0
Fresno	0	0	0	0	0	0	0	0	0	0
Glenn	0	0	0	0	0	0	0	0	0	0
Humboldt	0	0	0	0	0	0	0	0	0	0
Imperial	0	0	0	0	0	0	0	0	0	0
Inyo	0	0	0	0	0	0	0	0	0	0
Kern	0	0	0	0	0	0	0	0	0	0
Kings	0	0	0	0	0	0	0	0	0	0
Lake	0	0	0	0	0	0	0	0	0	0
Lassen	0	0	0	0	0	0	0	0	0	0
Los Angeles	0	0	0	0	0	0	0	0	0	0
City of Long Beach*	0	0	0	0	0	0	0	0	0	0
City of Pasadena*	0	0	0	0	0	0	0	0	0	0
Madera	0	0	0	0	0	0	0	0	0	0
Marin	0	0	0	0	0	0	0	0	0	0
Mariposa	0	0	0	0	0	0	0	0	0	0
Mendocino	0	0	0	0	0	0	0	0	0	0
Merced	0	0	0	0	0	0	0	0	0	0
Modoc	0	0	0	0	0	0	0	0	0	0
Mono	0	0	0	0	0	0	0	0	0	0
Monterey	0	0	0	0	0	0	0	0	0	0
Napa	0	0	0	0	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0
Orange	0	0	0	0	0	0	0	0	0	0
Placer	0	0	0	0	0	0	0	0	0	0
Plumas	0	0	0	0	0	0	0	0	0	0
Riverside	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	0
San Benito	0	0	0	0	0	0	0	0	0	0
San Bernardino	0	0	0	0	0	0	0	0	0	0
San Diego	0	0	0	0	0	0	0	0	0	0
San Francisco	1	0	0	0	0	0	0	0	0	0
San Joaquin	0	0	0	0	0	0	0	0	0	0
San Luis Obispo	0	0	0	0	0	0	0	0	0	0
San Mateo	0	0	0	0	0	0	0	0	0	0
Santa Barbara	0	0	0	0	0	0	0	0	0	0
Santa Clara	0	0	0	0	1	0	0	0	1	0
Santa Cruz	0	0	0	0	0	0	0	0	0	0
Shasta	0	0	0	0	0	0	0	0	0	0
Sierra	0	0	0	0	0	0	0	0	0	0
Siskiyou	0	0	0	0	0	0	0	0	0	0
Solano	0	0	0	0	0	0	0	0	0	0
Sonoma	0	0	0	0	0	0	0	0	0	0
Stanislaus	0	0	0	0	0	0	0	0	0	0
Sutter	0	0	0	0	0	0	0	0	0	0
Tehama	0	0	0	0	0	0	0	0	0	0
Trinity	0	0	0	0	0	0	0	0	0	0
Tulare	0	0	0	0	0	0	0	0	0	0
Tuolumne	0	0	0	0	0	0	0	0	0	0
Ventura	0	0	0	0	0	0	0	0	0	0
Yolo	0	0	0	0	0	0	0	0	0	0
Yuba	0	0	0	0	0	0	0	0	0	0

* City health jurisdictions not included in county total.

Table 26. Probable tetanus cases, by local health jurisdiction and year of disease onset – California, 2010–2014

	2010	2011	2012	2013	2014
	Cases	Cases	Cases	Cases	Cases
CALIFORNIA	0	3	4	4	4
Alameda	0	0	0	0	0
City of Berkeley*	0	0	0	0	0
Alpine	0	0	0	0	0
Amador	0	0	0	0	0
Butte	0	0	0	0	0
Calaveras	0	0	0	0	0
Colusa	0	0	0	0	0
Contra Costa	0	0	1	0	0
Del Norte	0	0	0	0	0
El Dorado	0	0	0	0	0
Fresno	0	0	0	0	0
Glenn	0	0	0	0	0
Humboldt	0	0	0	0	0
Imperial	0	0	0	0	1
Inyo	0	0	0	0	0
Kern	0	0	0	0	0
Kings	0	0	0	0	0
Lake	0	0	0	0	0
Lassen	0	0	0	0	0
Los Angeles	0	0	0	1	0
City of Long Beach*	0	0	0	0	1
City of Pasadena*	0	0	0	0	0
Madera	0	0	0	0	0
Marin	0	0	0	0	0
Mariposa	0	0	0	0	0
Mendocino	0	0	0	0	0
Merced	0	0	0	1	0
Modoc	0	0	0	0	0
Mono	0	0	0	0	0
Monterey	0	0	0	0	0
Napa	0	0	0	0	0
Nevada	0	0	0	0	0
Orange	0	1	1	0	2
Placer	0	0	0	0	0
Plumas	0	0	0	0	0
Riverside	0	0	0	0	0
Sacramento	0	0	1	0	0
San Benito	0	0	0	0	0
San Bernardino	0	0	1	0	0
San Diego	0	1	0	0	0
San Francisco	0	0	0	0	0
San Joaquin	0	0	0	0	0
San Luis Obispo	0	0	0	0	0
San Mateo	0	0	0	0	0
Santa Barbara	0	1	0	0	0
Santa Clara	0	0	0	1	0
Santa Cruz	0	0	0	0	0
Shasta	0	0	0	0	0
Sierra	0	0	0	0	0
Siskiyou	0	0	0	0	0
Solano	0	0	0	0	0
Sonoma	0	0	0	0	0
Stanislaus	0	0	0	0	0
Sutter	0	0	0	0	0
Tehama	0	0	0	0	0
Trinity	0	0	0	0	0
Tulare	0	0	0	0	0
Tuolumne	0	0	0	0	0
Ventura	0	0	0	1	0
Yolo	0	0	0	0	0
Yuba	0	0	0	0	0

* City health jurisdictions not included in county total.

Table 27. Confirmed and probable varicella hospitalizations and deaths, by local health jurisdiction and year of disease onset – California, 2010–2014

	2010†	2011†	2012‡	2013	2014
CALIFORNIA	56	48	37	32	41
Alameda	2	0	2	1	5
City of Berkeley*	0	0	0	0	0
Alpine	0	0	0	0	0
Amador	0	0	0	0	0
Butte	1	0	0	0	0
Calaveras	0	0	0	0	0
Colusa	0	0	0	0	0
Contra Costa	0	2	2	3	1
Del Norte	0	0	0	0	0
El Dorado	0	0	0	0	0
Fresno	2	2	0	2	5
Glenn	0	0	0	0	0
Humboldt	0	0	0	0	1
Imperial	1	0	1	0	0
Inyo	0	0	0	0	0
Kern	1	0	0	0	1
Kings	0	0	0	0	0
Lake	0	0	0	0	0
Lassen	0	0	0	0	0
Los Angeles	20	14	11	8	9
City of Long Beach*	0	0	0	0	0
City of Pasadena*	0	0	1	1	0
Madera	0	0	0	0	0
Marin	0	0	0	0	0
Mariposa	0	0	0	0	0
Mendocino	0	0	0	0	0
Merced	0	0	1	0	0
Modoc	0	0	0	0	0
Mono	0	0	0	0	0
Monterey	0	1	0	0	0
Napa	1	0	0	0	0
Nevada	0	0	0	0	0
Orange	9	1	6	4	4
Placer	0	0	1	0	0
Plumas	0	0	0	0	0
Riverside	0	2	2	2	3
Sacramento	1	3	0	1	1
San Benito	0	0	0	0	0
San Bernardino	2	7	0	1	3
San Diego	9	10	5	2	2
San Francisco	0	0	1	2	1
San Joaquin	0	1	1	0	2
San Luis Obispo	2	1	0	0	1
San Mateo	0	1	2	1	0
Santa Barbara	0	0	0	1	0
Santa Clara	1	0	1	1	0
Santa Cruz	1	0	0	0	0
Shasta	0	0	0	0	0
Sierra	0	0	0	0	0
Siskiyou	0	0	0	0	0
Solano	0	0	0	1	0
Sonoma	3	1	0	0	1
Stanislaus	0	0	0	0	0
Sutter	0	1	0	0	0
Tehama	0	0	0	0	0
Trinity	0	0	0	0	0
Tulare	0	0	0	0	1
Tuolumne	0	0	0	1	0
Ventura	0	0	0	0	0
Yolo	0	1	0	0	0
Yuba	0	0	0	0	0

* City health jurisdictions not included in county total.

† Includes two deaths

‡ Includes one death