

Vaccine-Preventable Disease Surveillance in California



2015

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



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We are grateful to California local health department (LHD) staff for their continued support and tireless efforts in communicable disease surveillance and control 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. LHDs 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. Influenza is covered in a separate report available on the [CDPH Influenza Webpage](http://www.cdph.ca.gov/HealthInfo/discond/Pages/Influenza(Flu).aspx) ([http://www.cdph.ca.gov/HealthInfo/discond/Pages/Influenza\(Flu\).aspx](http://www.cdph.ca.gov/HealthInfo/discond/Pages/Influenza(Flu).aspx)).

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 March 15, 2017

Diphtheria

Although respiratory diphtheria is now extraordinarily rare in the United States, it continues to cause illness globally. In 2015, Spain reported its first case of diphtheria in almost 30 years in a 6-year-old unvaccinated boy who died of the disease. Diphtheria remains endemic in many parts of the world, and unimmunized or incompletely immunized travelers can contract diphtheria when visiting endemic areas (Table 1). The last reported case in the U.S. occurred in 2014. However, *C. diphtheriae* may continue to circulate in areas of the U.S. with previously endemic diphtheria. In 1996, 10 isolates of *C. diphtheriae*, 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 LHD, in accordance with Title 17 of the California Code of Regulations. The LHDs 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 2015. 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) (<http://www.cdph.ca.gov/HEALTHINFO/DISCOND/Pages/Diphtheria.aspx>).

Haemophilus influenzae Disease

Haemophilus influenzae type b (Hib) disease is vaccine preventable and is now rare in the United States. The majority of invasive *H. influenzae* cases reported in children in recent years have been caused by non-type b strains.

Surveillance Case Definition (2015)

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 LHD, in accordance with Title 17 of the California Code of Regulations. The LHDs 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); OR
- Detection of *Haemophilus influenzae*-specific nucleic acid in a specimen obtained from a normally sterile body site (e.g., CSF, blood, joint, pleural, or pericardial fluid), using a validated polymerase chain reaction (PCR) assay

Epidemiologic Summary

In 2015, 65 invasive *Haemophilus influenzae* disease cases in persons < 15 years of age were reported statewide (Table 2). Of the 65 cases, 2 (3%) were fatal. The fatalities occurred in an infant < 12 months of age and in a 1-year-old child. Serotyping was attempted on 49 (75%) isolates and one was identified as Hib (Table 3).

The case-patient with Hib was a 5-year-old male diagnosed with pneumonia and bacteremia who had received 4 doses of Hib vaccine, as recommended. Hib vaccine failures occur rarely; more than 95% of infants will develop protective antibody levels after receiving the Hib vaccine series.

Of the 49 isolates that were serotyped, 12 (25%) were serotype a, 1 (2%) was serotype b, 1 (2%) was serotype e, 4 (8%) were serotype f, 2 (4%) were identified only as other [a, c-f (non-b)], and 29 (59%) were nontypeable. The isolate for one of the fatal case-patients was nontypeable and the serotype for the second fatal case-patient was unknown. Prior to the 2015 case, the last case of Hib in a child < 15 years of age in California occurred in 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) ([http://www.cdph.ca.gov/HealthInfo/discond/Pages/HaemophilusInfluenzaetypeb\(Hib\).aspx](http://www.cdph.ca.gov/HealthInfo/discond/Pages/HaemophilusInfluenzaetypeb(Hib).aspx)).

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Table 2. Invasive *Haemophilus influenzae* disease cases <15 years of age of all serotypes by local health jurisdiction – California, 2014–2015

	2014	2015†
CALIFORNIA	40	65
Alameda*	2	2
City of Berkeley*	0	0
Alpine	0	0
Amador	0	1
Butte	1	1
Calaveras	0	0
Colusa	0	0
Contra Costa	0	1
Del Norte	0	0
El Dorado	1	0
Fresno	3	5
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*	8	17
City of Long Beach*	2	0
City of Pasadena*	0	0
Madera	0	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	1	2
Placer	0	0
Plumas	0	0
Riverside	3	4
Sacramento	1	3
San Benito	0	0
San Bernardino	2	3
San Diego	3	2
San Francisco	2	0
San Joaquin	0	4
San Luis Obispo	2	1
San Mateo	0	0
Santa Barbara	1	1
Santa Clara	4	6
Santa Cruz	0	0
Shasta	0	0
Sierra	0	0
Siskiyou	0	0
Solano	0	1
Sonoma	0	0
Stanislaus	0	1
Sutter	0	0
Tehama	1	0
Trinity	0	0
Tulare	1	3
Tuolumne	0	0
Ventura	0	3
Yolo	0	2
Yuba	0	0

* City health jurisdictions not included in county total.

† In 2015, CSTE changed the *Haemophilus influenzae* case definition.

Table 3. Number of reported invasive *Haemophilus influenzae* disease cases <15 years of age by age, sex, race/ethnicity and serotype – California, 2015

	Cases	Percent of Cases
Total		
California	65	100
Age, in years		
< 1	24	37
1-14	41	63
Sex		
Female	29	45
Male	36	55
Race/Ethnicity*		
American Indian or Alaskan Native	0	0
Asian or Pacific Islander	7	11
Black or African American	12	18
Hispanic or Latino	19	29
White	12	18
Other or Multiple Race	5	8
Serotype		
a	12	18
b (Hib)	1	2
c	0	0
e	1	2
f	4	6
Other [a, c-f (non-b)]	2	3
Nontypeable	29	45
Unknown	16	25

* 10 cases had unknown race/ethnicity.

Hepatitis A Infection

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. Since then, additional outbreaks involving frozen berries and other food products have been identified in the United States and other countries.

Surveillance Case Definition (2012)

California healthcare providers are required to report known or suspected cases of hepatitis A infection to the LHD, in accordance with Title 17 of the California Code of Regulations. The LHDs 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 2015, a total of 181 HAV infection cases were reported statewide in 38 (62%) of 61 LHJs (Table 4). The statewide incidence of reported HAV infection in 2015 was 0.46 cases per 100,000 population (Table 5). This was a 24% increase in cases from the previous year when 146 cases were reported in 29 (48%) of 61 LHJs at a rate of 0.37 cases per 100,000 population. In 2015, one outbreak was reported; this accounted for 4% of all 2015 cases.

Of the 181 case-patients with disease onset in 2015, 72 (40%) were hospitalized. One fatality was reported in a 61-year-old female with pre-existing conditions who had unknown sources of infection and no typical risk factors for hepatitis A. The vaccination status for this case was unknown.

The median age of all cases in 2015 was 39 years (range: 4–92 years). Persons aged 31–40 had the highest rate of HAV infection per 100,000 population (0.75), followed by persons aged 21–30 (0.69). There were 13 cases in children under the age of 18, accounting for 7% 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.

Table 4. Reported hepatitis A cases by local health jurisdiction – California, 2014–2015

	2014	2015
CALIFORNIA	146	181
Alameda	9	6
City of Berkeley*	0	0
Alpine	0	0
Amador	0	0
Butte	2	1
Calaveras	0	1
Colusa	0	0
Contra Costa	3	6
Del Norte	0	1
El Dorado	0	1
Fresno	0	0
Glenn	0	0
Humboldt	1	1
Imperial	0	1
Inyo	0	0
Kern	3	5
Kings	0	1
Lake	1	1
Lassen	0	0
Los Angeles	42	33
City of Long Beach*	5	3
City of Pasadena*	3	1
Madera	0	1
Marin	1	1
Mariposa	0	0
Mendocino	0	0
Merced	0	0
Modoc	0	0
Mono	1	0
Monterey	0	1
Napa	0	9
Nevada	1	0
Orange	14	17
Placer	0	3
Plumas	0	0
Riverside	7	13
Sacramento	3	3
San Benito	0	0
San Bernardino	2	4
San Diego	14	22
San Francisco	6	5
San Joaquin	2	7
San Luis Obispo	0	0
San Mateo	1	2
Santa Barbara	2	2
Santa Clara	10	6
Santa Cruz	3	0
Shasta	2	0
Sierra	0	0
Siskiyou	0	0
Solano	0	1
Sonoma	1	3
Stanislaus	3	3
Sutter	1	1
Tehama	0	1
Trinity	0	0
Tulare	1	5
Tuolumne	0	0
Ventura	2	3
Yolo	0	4
Yuba	0	2

*City health jurisdictions not included in county total.

Asian or Pacific Islanders had the highest rate of HAV infection per 100,000 population (0.60), followed by persons in the “Other/Multi-race” group, which includes American Indians, Alaskan Natives, multi-racial and other race/ethnicities (0.57), and Whites (0.49). Males became infected with hepatitis A in 2015 at a higher rate per 100,000 population than females (0.51 and 0.41, respectively).

Foreign travel to endemic areas was the most common risk factor identified in 2015 cases, with 62 (34%) 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 (18%), being a close contact of persons with HAV infection (11%), and illicit drug use (2%). These categories are not mutually exclusive as some cases had more than one known risk factor. No known reason for infection or significant risk factors were identified in 85 (47%) of all cases reported in 2015.

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

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Table 5. Reported hepatitis A cases by age, sex, and race/ethnicity – California, 2015

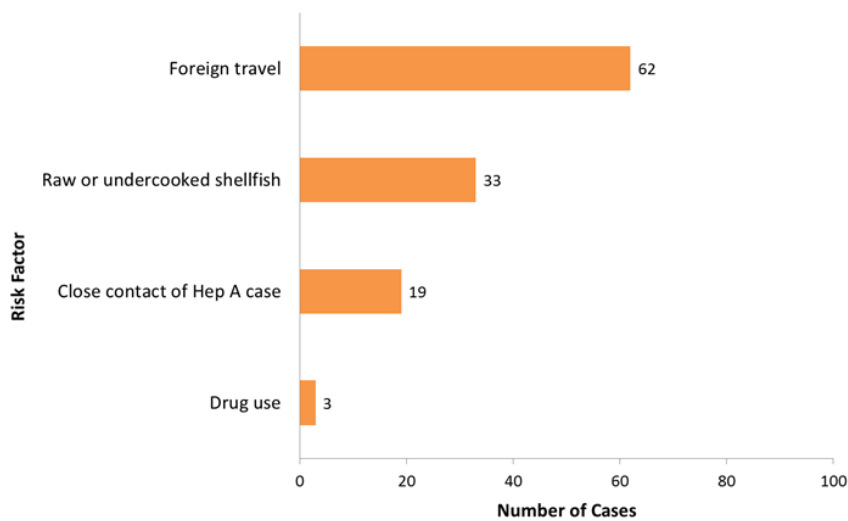
	Cases	Percent of Cases	Rate per 100,000 pop.
Total			
California	181	100	0.46
Age, in years*†			
< 2	0	0	0.00
2-5	1	<1	0.05
6-10	3	2	0.12
11-20	14	8	0.27
21-30	39	22	0.69
31-40	40	22	0.75
41-50	21	12	0.40
≥ 51	62	34	0.52
Sex†			
Female	81	45	0.41
Male	99	55	0.51
Race/Ethnicity†			
Asian or Pacific Islander	32	18	0.60
Black or African American	2	1	0.09
Hispanic or Latino	45	25	0.30
White	7	4	0.49
Other‡	73	40	0.57

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

† 1 person had unknown age; 1 person had unknown sex; 22 persons had unknown race/ethnicity.

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

Figure 1. Reported risk factors of hepatitis A cases – California, 2015



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

Hepatitis B Infection, Acute

Although the incidence of acute hepatitis B virus (HBV) infection has decreased dramatically due to universal childhood vaccination, it remains a major health issue in the United States. More than 850,000 persons are estimated to 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. The current epidemics of heroin and opioid use are of concern and have resulted in transmission of HBV via the use of contaminated needles.

Surveillance Case Definition (2012)

California healthcare providers are required to report known or suspected cases of acute HBV infection to the LHD, 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 2015, 159 cases of acute HBV infection were reported statewide in 29 (48%) of 61 LHJs, a 46% increase from the previous year (Table 6). The overall incidence rate for 2015 was 0.41 cases per 100,000 population (Table 7), compared to 0.28 cases per 100,000 population in 2014. In 2015, rates were highest for persons aged 40–49 years (0.98 cases per 100,000 population) and 50–59 years (0.79 cases per 100,000 population); no cases were reported among children or adolescents aged ≤19 years. The median age of the 159 patients was 46 years (range: 21–84 years); 110 (69%) were male. Non-Hispanic white and Hispanic persons accounted for 42% and 26% of cases, respectively. Of the 159 patients, 98 (62%) were hospitalized and 4 (3%) died.

Of the 159 patients, 74 (47%) reported one or more exposures or behaviors associated with acute HBV infection during their exposure period (45–160 days prior to illness onset) [Figure 2]. These exposures or behaviors included: multiple sex partners (27; 17%), being a man who has sex with men (26; 16%), injection-drug use (18; 11%), sexual contact with a person with confirmed or suspected HBV infection (17; 11%), and household contact of a person with confirmed or suspected HBV infection (7; 4%).

Table 6. Reported acute hepatitis B cases by local health jurisdiction – California, 2014–2015

	2014	2015
CALIFORNIA	109	159
Alameda	5	2
City of Berkeley*	0	0
Alpine	0	0
Amador	0	0
Butte	1	3
Calaveras	0	0
Colusa	0	0
Contra Costa	2	7
Del Norte	0	0
El Dorado	0	2
Fresno	3	4
Glenn	0	0
Humboldt	0	0
Imperial	1	0
Inyo	0	0
Kern	3	7
Kings	0	0
Lake	1	0
Lassen	0	0
Los Angeles†	41	51
City of Long Beach*	3	4
City of Pasadena*	1	1
Madera	1	2
Marin	0	0
Mariposa	0	0
Mendocino	0	0
Merced	0	0
Modoc	0	0
Mono	0	0
Monterey	0	3
Napa	0	0
Nevada	0	0
Orange	7	10
Placer	0	2
Plumas	0	0
Riverside	4	2
Sacramento	0	3
San Benito	0	0
San Bernardino	9	13
San Diego	7	12
San Francisco	0	4
San Joaquin	4	4
San Luis Obispo	1	0
San Mateo	1	5
Santa Barbara	1	0
Santa Clara	4	4
Santa Cruz	1	0
Shasta	1	0
Sierra	0	0
Siskiyou	1	0
Solano	0	1
Sonoma	1	2
Stanislaus	2	4
Sutter	0	1
Tehama	0	0
Trinity	0	0
Tulare	3	1
Tuolumne	0	0
Ventura	0	3
Yolo	0	1
Yuba	0	1

* City health jurisdictions not included in county total.

† One 2014 acute hepatitis B case was identified retrospectively in 2015.

In addition, 7 (4%) cases reported a history of an accidental needlestick/puncture or other percutaneous injury involving exposure to blood. Eight (%) cases reported having surgery during their exposure period, but the source of their infection could not be determined.

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

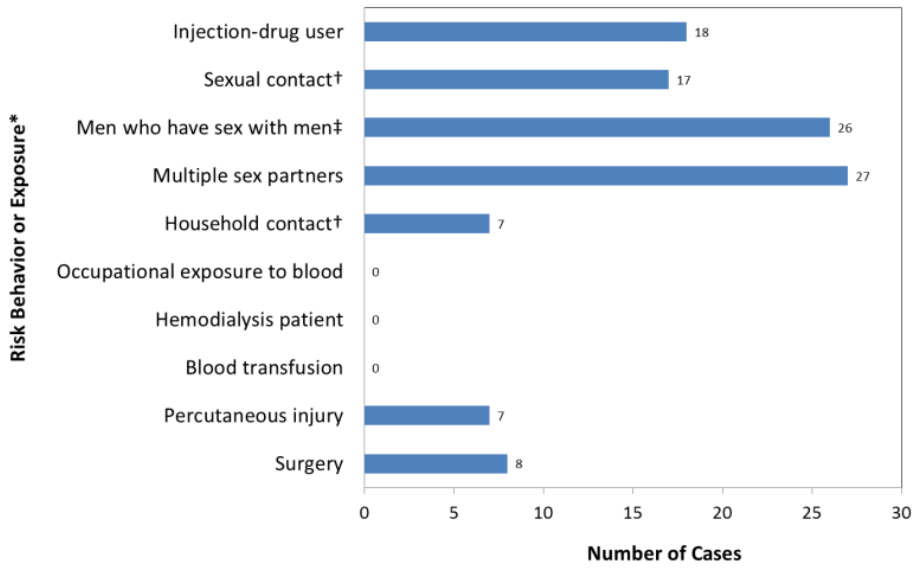
Table 7. Number and incidence rate of reported acute hepatitis B cases, by age, sex, and race/ethnicity – California, 2015

	Cases	Percent of Cases	Rate per 100,000 pop.
Total			
California	159	100	0.41
Age, in years*			
<10	0	0	0.00
10-19	0	0	0.00
20-29	13	8	0.23
30-39	34	21	0.63
40-49	51	32	0.98
50-59	41	26	0.79
≥60	20	13	0.27
Sex			
Female	47	30	0.24
Male	110	69	0.56
Transgender	2	1	--
Race/Ethnicity†			
American Indian or Alaskan Native	1	<1	0.58
Asian or Pacific Islander	15	9	0.28
Black or African American	15	9	0.67
Hispanic or Latino	41	26	0.27
White	66	42	0.44
Other or Multiple Race	1	1	0.10

* Most persons 0-18 years old should have been vaccinated according to current and previous ACIP recommendations.

† 20 cases had unknown race/ethnicity.

Figure 2. Reported risk behaviors/exposures for acute hepatitis B cases – California, 2015



* 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 110 acute hepatitis B cases were reported among males in 2015

Perinatal Hepatitis B Infection

Administration of postexposure prophylaxis (PEP) at birth to infants of women with chronic HBV infection has reduced the number of infants infected with HBV. Unfortunately, even with appropriate PEP, a small percentage of infants born to infected women become infected and eventually develop chronic hepatitis B infection. It is now thought that a high maternal HBV viral load during pregnancy can result in perinatal transmission even when appropriate PEP is administered to the infant. To ensure that HBV-infected pregnant women with high viral loads are identified, the American Congress of Obstetricians and Gynecologists (ACOG) now recommends HBV DNA screening of all HBV-infected pregnant women and referral of women with HBV DNA >20,000 IU/mL to a specialist for possible antiviral treatment during pregnancy. For more information, see page 2 of the [ACOG Screening and Referral Algorithm for HBV Infection among Pregnant Women](http://immunizationforwomen.org/uploads/Prenatal%20HBsAg%20Testing%20Guide%20and%20Algorithm_Final.pdf) (http://immunizationforwomen.org/uploads/Prenatal%20HBsAg%20Testing%20Guide%20and%20Algorithm_Final.pdf).

Infected infants are 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 LHD, in accordance with Title 17 of the California Code of Regulations. The LHDs 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 2015, 11 cases of perinatal hepatitis B infection were diagnosed and reported statewide in Los Angeles (3), Merced (1), Orange (3), Sacramento (2), Santa Clara (1), and Shasta (1) counties. Two of the 11 children were born in 2013, eight were born in 2014, and one was born in 2015. The range of ages for the cases at the time of post-vaccination serologic testing was 5 to 16 months of age. All of the children had received appropriate PEP at birth. Ten out of the 11 infected children received at least three doses of hepatitis B vaccine. Two additional cases of HBV infection were reported to CDPH in children greater than 24 months of age (24 months and 27 months) who were therefore classified as chronic hepatitis B cases according to the CSTE 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) (<http://www.cdph.ca.gov/HealthInfo/discond/Pages/PerinatalHepatitisBPrevention.aspx>).

Measles

A large measles outbreak associated with a California theme park began in late December 2014 and was declared over on April 17, 2015.

Surveillance Case Definition (2013)

California healthcare providers are required to report known or suspected cases of measles to the LHD, 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 $\geq 101^{\circ}\text{F}$ 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 $\geq 101^{\circ}\text{F}/38.3^{\circ}\text{C}$ 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 2015, 125 measles cases were reported statewide from 17 (28%) of 61 LHJs (Table 8). This was an increase from the previous year, when 75 cases were reported from 16 (26%) LHJs. Of the 2015 cases, 117 (94%) were associated with the large theme park outbreak.

The cases associated with this outbreak were measles genotype B3. Of the remaining eight cases not associated with the outbreak: six had international travel during their exposure period (Table 9), one had traveled domestically to Southern California by airplane, and one had no travel history. Both cases without a history of international travel had the measles genotype D8, which differed from the outbreak genotype and suggested an imported source.

Table 8. Reported measles cases by local health jurisdiction† – California, 2014–2015

	2014	2015
CALIFORNIA	75	125
Alameda*	5	5
City of Berkeley*	1	1
Alpine	0	0
Amador	0	0
Butte	0	0
Calaveras	0	0
Colusa	0	0
Contra Costa	4	1
Del Norte	0	0
El Dorado	0	0
Fresno	0	0
Glenn	0	0
Humboldt	1	0
Imperial	0	0
Inyo	0	0
Kern	0	0
Kings	0	0
Lake	0	0
Lassen	0	0
Los Angeles*	13	28
City of Long Beach*	0	2
City of Pasadena*	1	3
Madera	0	0
Marin	0	2
Mariposa	0	0
Mendocino	0	0
Merced	0	1
Modoc	0	0
Mono	0	0
Monterey	2	0
Napa	0	0
Nevada	0	0
Orange	24	33
Placer	0	0
Plumas	0	0
Riverside	6	7
Sacramento	0	0
San Benito	0	0
San Bernardino	1	11
San Diego	6	12
San Francisco	0	0
San Joaquin	1	0
San Luis Obispo	0	0
San Mateo	4	4
Santa Barbara	0	0
Santa Clara	2	3
Santa Cruz	0	0
Shasta	1	0
Sierra	0	0
Siskiyou	0	0
Solano	0	1
Sonoma	0	0
Stanislaus	0	0
Sutter	0	0
Tehama	0	0
Trinity	0	0
Tulare	0	0
Tuolumne	0	0
Ventura	3	10
Yolo	0	1
Yuba	0	0

†Local health jurisdiction where case was identified.

*City health jurisdictions not included in county total.

Of the 125 cases with disease onset in 2015, 22 (18%) were hospitalized, including 13 adults and nine children, seven of which were unvaccinated including one infant < 12 months (Table 10). One hospitalized pediatric patient with two doses of MMR vaccine was immunocompromised due to medication. Among those with complications reported, seven had pneumonia, eight had otitis media, and fourteen had diarrhea. The last fatal measles case in California was reported in 2003.

The median age of the 2015 cases was 22 years (range: 1 month–78 years). Of the 47 pediatric cases, 39 were unvaccinated (Table 11). Dates of rash onset ranged from January 1 to August 28, 2015.

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

Table 9. Countries visited during incubation period reported by measles cases with history of international travel – California, 2015

Country	Number Reporting Travel
India	2
China	3
France	1

Vaccine-Preventable Disease Surveillance in California

Table 10. Characteristics of measles cases – California, 2015

	Cases	Percent of Cases
Total		
California	125	100
Age, in years		
< 1	14	11
1-4	14	11
5-19	23	18
≥ 20	74	59
Sex		
Female	61	49
Male	64	51
Hospitalized*		
Yes	22	18
No	101	82
MMR Status		
≥ 2 MMR	17	14
1 MMR	8	6
0 MMR	52	42
Unknown†	48	38
Source		
International	6	5
Indigenous	119	95
Genotype‡		
B3	85	91
D4	1	1
D8	4	4
H1	3	3

* Two cases had missing hospitalization status.

† Includes self-reported vaccination status.

‡ Viral specimens were available for 96 patients; CDPH was unable to complete sequencing of 3 viral specimens.

Table 11. Measles cases by age and vaccination status – California, 2015

Age, in years	≥ 2 MMR	1 MMR	0 MMR	Unknown	Total Cases
< 2	0	1	21	0	22
2-5	0	4	4	0	8
6-17	3	0	14	0	17
18-54	14	3	12	43	72
≥ 55	1	0	0	5	6

Meningococcal Disease

The incidence of meningococcal disease in the United States is at an all-time low. However, outbreaks of meningococcal disease still occur. A serogroup B meningococcal disease outbreak occurred at a California university in late 2013 and a cluster of serogroup C cases in men who have sex with men occurred in 2014.

Surveillance Case Definition (2015)

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

Case Classification

Confirmed:

- Detection of *N. meningitidis*-specific nucleic acid in a specimen obtained from a normally sterile body site (e.g., blood or cerebrospinal fluid [CSF]), using a validated polymerase chain reaction (PCR) assay; OR
- Isolation of *N. meningitidis*:
 - From a normally sterile body site (e.g., blood or CSF, or, less commonly, synovial, pleural, or pericardial fluid); OR
 - From purpuric lesions.

Probable:

- 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 2015 (Figure 3). In 2015, 49 IMD cases were reported statewide, for an incidence rate of 0.13 cases per 100,000 population (Table 12). Of the 49 cases, 40 (82%) were serogrouped; serogroup B (26; 65%) was most frequently identified (Figure 4). Five (10%) fatalities were reported in 2015.

Twelve (24%) cases occurred in infants and children less than 18 years of age, including one fatality (Table 13). Among all serogroups, the highest incidence of disease occurred in infants less than one year of age (Figure 5). Of the pediatric cases with known serogroup, all were serogroup B, which is not included in the MenACWY vaccine. Vaccination status was known for six patients with IMD caused by serogroups C (3), W (2), or Y (1), which are included in the MenACWY vaccine. Among these patients, 2 (33%) had previously received at least one dose of MenACWY vaccine; one patient received the last dose 7 years prior to onset, while vaccination dates were unknown for the other patient.

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

Figure 3. Incidence of reported invasive meningococcal disease by year of onset – California, 1993–2015



Figure 4. Invasive meningococcal disease cases by serogroup – California, 2015

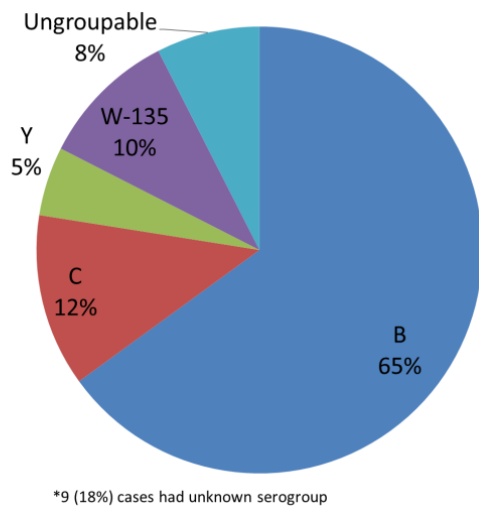


Table 12. Reported invasive meningococcal disease by local health jurisdiction – California, 2014–2015

	2014	2015†
CALIFORNIA	56	49
Alameda*	5	2
City of Berkeley*	0	0
Alpine	0	0
Amador	0	0
Butte	0	0
Calaveras	0	0
Colusa	0	1
Contra Costa	1	1
Del Norte	0	0
El Dorado	1	0
Fresno	2	1
Glenn	0	0
Humboldt	0	1
Imperial	0	0
Inyo	0	0
Kern	4	0
Kings	0	0
Lake	1	0
Lassen	0	0
Los Angeles*	12	12
City of Long Beach*	0	0
City of Pasadena*	0	0
Madera	0	0
Marin	0	0
Mariposa	0	0
Mendocino	1	1
Merced	0	0
Modoc	0	0
Mono	0	0
Monterey	1	2
Napa	0	1
Nevada	0	0
Orange	3	2
Placer	0	0
Plumas	0	0
Riverside	2	2
Sacramento	4	2
San Benito	0	0
San Bernardino	1	2
San Diego	9	3
San Francisco	2	5
San Joaquin	0	1
San Luis Obispo	0	1
San Mateo	1	2
Santa Barbara	0	1
Santa Clara	4	1
Santa Cruz	0	0
Shasta	0	0
Sierra	0	0
Siskiyou	0	0
Solano	1	1
Sonoma	0	0
Stanislaus	0	1
Sutter	0	0
Tehama	0	0
Trinity	0	0
Tulare	1	1
Tuolumne	0	0
Ventura	0	1
Yolo	0	1
Yuba	0	0

* City health jurisdictions not included in county total.

† In 2015, CSTE changed the meningococcal disease case definition.

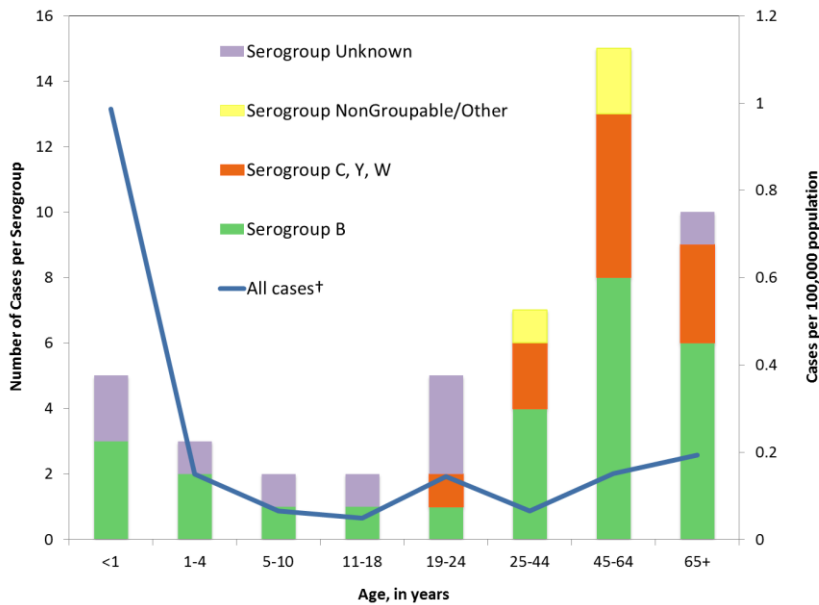
Vaccine-Preventable Disease Surveillance in California

Table 13. Number of reported invasive meningococcal disease cases by age, sex, race/ethnicity and serogroup – California, 2015

	All Serogroups	B	C	Y	W	Other/ Ungroupable	Unknown
Total							
California	49	26	5	2	4	3	9
Age, in years							
< 1	5	3	0	0	0	0	2
1-4	3	2	0	0	0	0	1
5-10	2	1	0	0	0	0	1
11-18	2	1	0	0	0	0	1
19-24	5	1	1	0	0	0	3
25-44	7	4	2	0	0	1	0
45-64	15	8	0	2	3	2	0
≥ 65	10	6	2	0	1	0	1
Sex							
Female	27	16	2	1	2	0	6
Male	22	10	3	1	2	3	3
Race/Ethnicity*							
American Indian or Alaskan Native	0	0	0	0	0	0	0
Asian or Pacific Islander	2	2	0	0	0	0	0
Black or African American	5	4	1	0	0	0	0
Hispanic or Latino	17	7	0	1	3	1	5
White	19	11	4	0	1	0	3
Other or Multiple Race	1	0	0	0	0	0	1

* 5 cases had unknown race/ethnicity.

Figure 5. Invasive meningococcal disease cases by age and serogroup* – California, 2015



* No serogroup A disease cases were identified.

† Includes cases where serogroup was not identified.

Mumps

Large mumps outbreaks among college students, most of whom have received two doses of measles, mumps and rubella (MMR) vaccine continue to occur in the United States. The last California mumps outbreak among college students occurred in 2011.

Surveillance Case Definition (2012)

California healthcare providers are required to report known or suspected cases of mumps to the LHD, 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 2015, 4 confirmed and 27 probable mumps cases were reported statewide (Table 14). Probable mumps cases are classified based upon the presence of clinical symptoms and mumps IgM positivity. 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 is considered more reliable for detecting true cases.

The 31 confirmed and probable cases in 2015 were reported from 7 (11%) of 61 LHJs. Epidemiologic characteristics of probable and confirmed mumps cases appear in Table 15.

Three patients were hospitalized including two persons with immunocompromising or underlying conditions. Reported complications include meningitis (1), orchitis (3), pneumonia (1), and sepsis (1).

Nine of the confirmed and probable cases reported international travel in their exposure period. Countries in which travel occurred included: Scotland, France, England, Haiti, Ireland, India, Argentina,

Table 14. Reported confirmed and probable mumps cases by local health jurisdiction – California, 2014–2015

	2014	2015
CALIFORNIA	37	31
Alameda*	1	0
City of Berkeley*	0	0
Alpine	0	0
Amador	0	0
Butte	1	0
Calaveras	0	0
Colusa	0	0
Contra Costa	1	3
Del Norte	0	0
El Dorado	0	0
Fresno	1	0
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	14
City of Long Beach*	0	2
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	1
Napa	0	0
Nevada	0	0
Orange	8	5
Placer	0	0
Plumas	0	0
Riverside	4	0
Sacramento	1	0
San Benito	0	0
San Bernardino	3	4
San Diego	2	0
San Francisco	0	2
San Joaquin	0	0
San Luis Obispo	0	0
San Mateo	0	0
Santa Barbara	0	0
Santa Clara	1	0
Santa Cruz	1	0
Shasta	0	0
Sierra	0	0
Siskiyou	0	0
Solano	0	0
Sonoma	0	0
Stanislaus	1	0
Sutter	0	0
Tehama	0	0
Trinity	0	0
Tulare	0	0
Tuolumne	0	0
Ventura	2	0
Yolo	0	0
Yuba	0	0

* City health jurisdictions not included in county total.

South Africa, Vietnam, Thailand, Japan, and Fiji. Some patients traveled to more than one country during their potential exposure period.

One patient was a college student but was not linked to any mumps outbreaks in university settings.

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

Table 15. Characteristics of mumps cases – California, 2015

	Cases	Percent of Cases
Total		
California	31	100
Age, in years		
< 1	0	0
1-4	2	7
5-19	6	19
≥ 20	23	74
Sex		
Female	14	45
Male	17	55
Case Classification		
Probable	27	87
Confirmed	4	13
Hospitalized		
Yes	3	10
No	28	90
MMR Status		
≥ 2 MMR	2	6
1 MMR	4	13
0 MMR	5	16
Unknown	20	65
Source		
International	9	29
Indigenous	22	71

Pertussis

An increase in pertussis incidence in the United States has occurred in recent years. One factor thought to be associated with this increase is the use of acellular pertussis vaccines, which have been in use since the late 1990s. It is now known that the immunity conferred by acellular pertussis vaccines does not offer long-term protection. Pertussis peaks 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 LHD, in accordance with Title 17 of the California Code of Regulations. The LHDs 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 2015, 4,706 pertussis cases were reported statewide in 53 (87%) of 61 LHJs. This was a significant decrease from the previous year, when 11,205 cases were reported in 55 (90%) LHJs and consistent with the cyclical nature of pertussis (Table 16). The statewide incidence of reported pertussis in 2015 was 12.0 cases per 100,000 population.

Of the 4,706 cases with disease onset in 2015, 272 (6%) were hospitalized. Two fatalities with disease onset in 2015 were reported; one death occurred in an adult ≥ 65 years of age, and the other death occurred in an infant ≤ 3 weeks of age at time of disease onset. The median age of all cases in 2015 was 11 years (range: 0–99 years). The majority of cases (4,020; 85%) occurred in children less than 18 years of age. Of the 4,020 pediatric cases, 326 (8%) were in infants less than 4 months of age who were too young to be vaccinated (Figure 6). Of the 326 cases less than 4 months of age, 179 (55%) were hospitalized in 2015, compared to 282 (45%) in 2014 (Table 17). Adolescents 14–16 years of age accounted for 876 (22%) of the pediatric cases.

Of 3,694 pediatric cases aged 4 months–18 years, 2,972 (80%) were known to have previously received at least one dose of pertussis vaccine prior to illness onset, 285 (8%) were unimmunized against pertussis, and 437 (12%) had unknown pertussis immunization status or missing information.

Hispanic infants less than 4 months of age remain disproportionately affected by pertussis. Incidence rates by race/ethnicity for infants less than 4 months of age were highest in Hispanic infants, followed by non-Hispanic whites (Figure 7). Among children and adolescents, the highest rates were in non-Hispanic whites.

Of the 4,706 cases reported in 2015, 3,224 (69%) were classified as confirmed, 433 (9%) as probable, and 1,049 (22%) as suspect. Among cases with complete information, the most commonly reported symptoms were paroxysmal coughing (79%), post-tussive vomiting (47%), inspiratory “whoop” (36%) and apnea (21%).

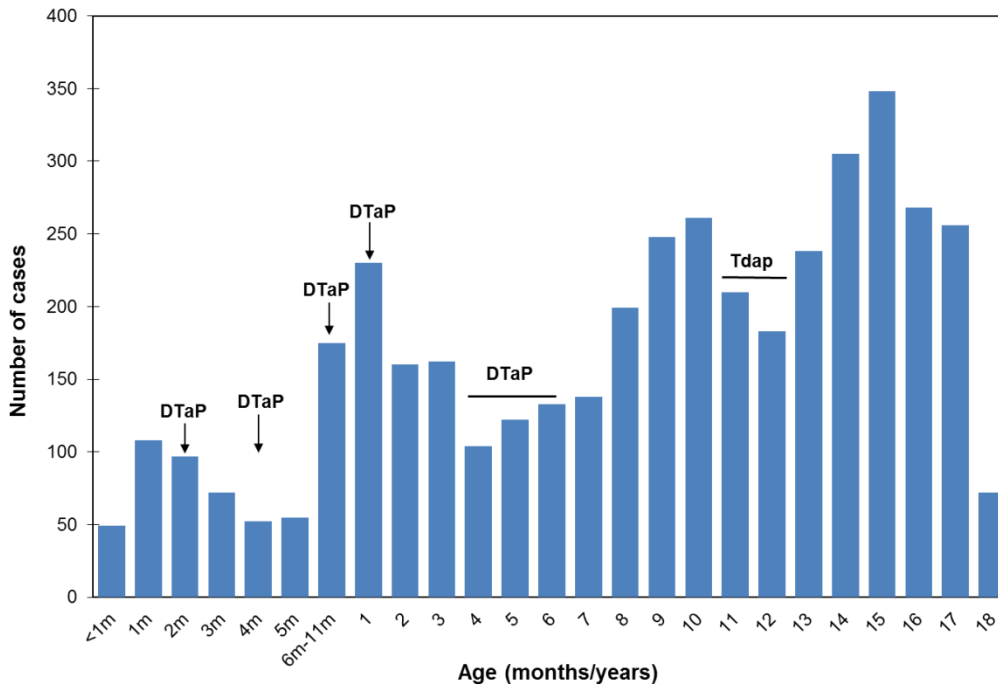
For more information about pertussis, please visit the [CDPH Pertussis Webpage](http://www.cdph.ca.gov/HealthInfo/discond/Pages/Pertussis.aspx) (<http://www.cdph.ca.gov/HealthInfo/discond/Pages/Pertussis.aspx>).

Table 16. Reported pertussis cases by local health jurisdiction – California, 2014–2015

	2014	2015
CALIFORNIA	11205	4706
Alameda*	364	179
City of Berkeley*	55	10
Alpine	0	0
Amador	1	2
Butte	33	8
Calaveras	17	1
Colusa	0	4
Contra Costa	474	181
Del Norte	2	0
El Dorado	36	27
Fresno	392	57
Glenn	1	2
Humboldt	149	56
Imperial	10	10
Inyo	0	0
Kern	167	145
Kings	16	6
Lake	3	6
Lassen	5	0
Los Angeles*	2001	1141
City of Long Beach*	181	37
City of Pasadena*	22	8
Madera	47	6
Marin	273	53
Mariposa	0	0
Mendocino	10	9
Merced	9	13
Modoc	6	0
Mono	0	0
Monterey	129	76
Napa	137	49
Nevada	16	3
Orange	447	162
Placer	120	49
Plumas	1	2
Riverside	469	182
Sacramento	446	287
San Benito	11	7
San Bernardino	206	91
San Diego	2018	895
San Francisco	131	69
San Joaquin	214	81
San Luis Obispo	45	22
San Mateo	128	40
Santa Barbara	120	66
Santa Clara	538	149
Santa Cruz	166	79
Shasta	33	15
Sierra	0	0
Siskiyou	7	6
Solano	144	42
Sonoma	704	34
Stanislaus	92	38
Sutter	8	2
Tehama	38	5
Trinity	6	6
Tulare	37	86
Tuolumne	16	9
Ventura	347	107
Yolo	147	83
Yuba	10	3

* City health jurisdictions not included in county total.

Figure 6. Pediatric pertussis cases by age – California, 2015*



*Reported to CDPH as of 12/31/2016

Annotations in black indicate recommended vaccine doses

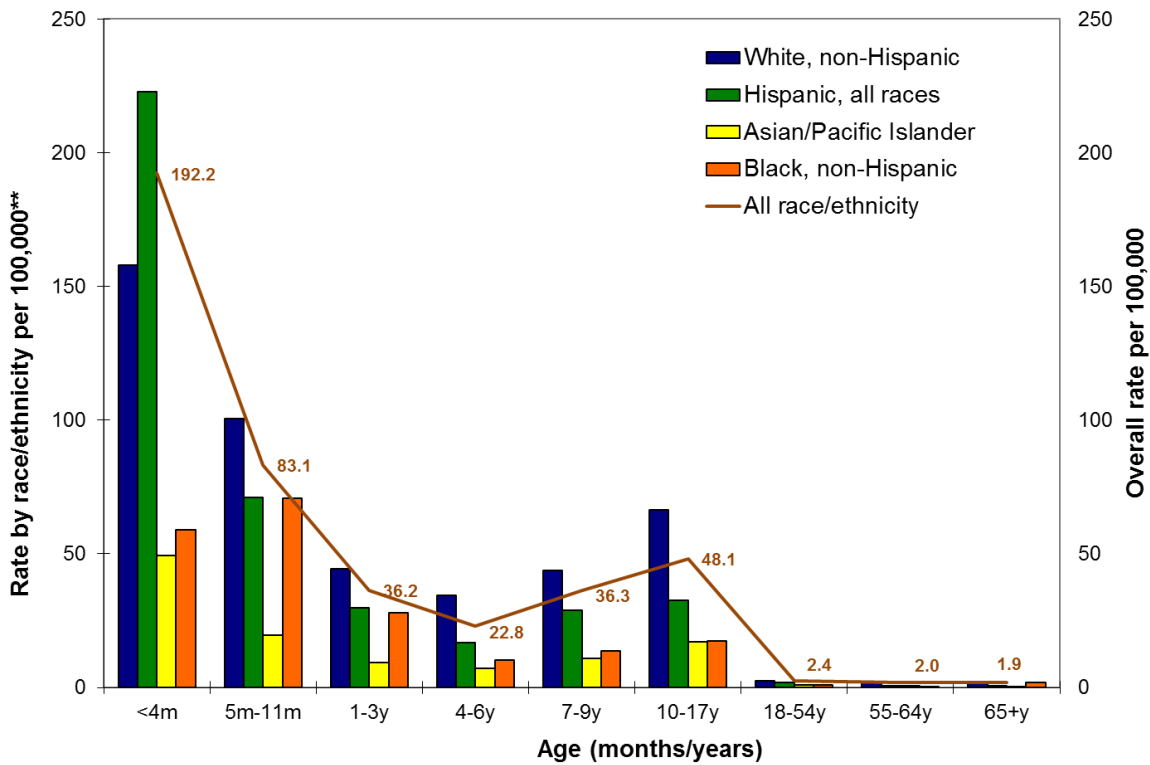
DTaP=Diphtheria, tetanus, and acellular pertussis vaccine

Tdap=Tetanus, diphtheria, and acellular pertussis vaccine

Table 17. Number and proportion of hospitalizations and deaths reported among cases < 4 months of age – California, 2013–2015

	2013		2014		2015	
	Cases	Percent of Cases	Cases	Percent of Cases	Cases	Percent of Cases
Total						
California	196		534		326	
Hospitalizations	106	54	282	53	179	55
Deaths	2	1	3	<1	1	<1

Figure 7. Pertussis incidence rates by age and race/ethnicity – California, 2015*



*Reported to CDPH as of 12/31/2016

**Denominators adjusted to account for partial birth cohort

Polio

Although poliovirus has been eradicated from most of the world, small numbers of wild polio cases are still being identified in Afghanistan, Pakistan and Nigeria.

Surveillance Case Definitions (2010)

California healthcare providers and laboratories are required to report known or suspected cases of poliovirus infection to the LHD, in accordance with Title 17 of the California Code of Regulations. The LHDs 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 2015. There has been no indigenous transmission of wild poliovirus in California since at least 1978. The last imported wild poliovirus case in California occurred in 1986 and the last indigenous vaccine-associated paralytic poliomyelitis (VAPP) case in California occurred in 1998.

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

Rubella and Congenital Rubella Syndrome

Rubella was eliminated from the United States in 2004. In 2015, the Pan-American Health Organization of the World Health Organization announced that endemic transmission of rubella in the Americas has ended and that the Americas are rubella-free.

However, rubella continues to circulate in other parts of the world. Notably, Poland has had an ongoing rubella outbreak since 2013.

Rubella Surveillance Case Definition (2013)

California healthcare providers are required to report known or suspected cases of rubella to the LHD, 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 2015, there were no reports of rubella infection or congenital rubella syndrome.

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

Tetanus

Although now rare in the United States, tetanus cases continue to occur among un- and undervaccinated persons.

Surveillance Case Definition (2010)

California healthcare providers are required to report known or suspected cases of tetanus to the LHD, in accordance with Title 17 of the California Code of Regulations. The LHDs 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

Three probable tetanus cases were reported in California in 2015 in the following LHJs: Los Angeles (1), Orange (1), and Riverside (1). The median age of the three patients was 38 years (range: 26–63); all were male. All three patients were hospitalized; one died.

Two (67%) of the three patients reported acute wounds prior to illness onset; both were related to injection-drug use, which is associated with increased risk for tetanus. The third patient could not recall a specific injury, and none of the three patients sought medical care prior to illness onset. Two of the patients were unvaccinated; vaccination history was unknown for the third patient.

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

Varicella Hospitalizations and Deaths

Although the incidence of varicella and varicella hospitalizations have decreased markedly since widespread use of varicella vaccine, hospitalizations and deaths due to varicella continue to occur, most often in children too young to be vaccinated or in susceptible, often immunocompromised, adults.

Surveillance Case Definition (2010)

California healthcare providers are required to report known or suspected varicella hospitalizations and deaths to the LHD, in accordance with Title 17 of the California Code of Regulations. The LHDs 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 2015, 58 probable and confirmed varicella-associated hospitalizations including one death were reported statewide in 16 (26%) of 61 LHJs (Table 18).

Of the 58 hospitalized cases in 2015, 14 (24%) were in children aged 18 years and younger. Eight cases occurred in infants less than 1 year of age (Figure 8) who were too young to be vaccinated. Among hospitalized adults with varicella aged 20 years and older, 35% were reported to be immunocompromised.

More outbreaks, which are defined by CDPH as the occurrence of ≥ 5 varicella cases that are related in place and epidemiologically linked, were reported in the state in 2015 (5) than in 2014 (2) [Figure 9]. All of these outbreaks occurred in schools.

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

Vaccine-Preventable Disease Surveillance in California

Table 18. Reported varicella hospitalizations by local health jurisdiction – California, 2014–2015

	2014	2015
CALIFORNIA	41	58
Alameda*	5	10
City of Berkeley*	0	2
Alpine	0	0
Amador	0	0
Butte	0	1
Calaveras	0	0
Colusa	0	0
Contra Costa	1	0
Del Norte	0	0
El Dorado	0	0
Fresno	5	0
Glenn	0	0
Humboldt	1	0
Imperial	0	0
Inyo	0	0
Kern	1	0
Kings	0	0
Lake	0	1
Lassen	0	0
Los Angeles*	9	12
City of Long Beach*	0	0
City of Pasadena*	0	0
Madera	0	0
Marin	0	1
Mariposa	0	0
Mendocino	0	0
Merced	0	0
Modoc	0	0
Mono	0	0
Monterey	0	1
Napa	0	0
Nevada	0	0
Orange	4	9
Placer	0	0
Plumas	0	0
Riverside	3	5
Sacramento	1	2
San Benito	0	0
San Bernardino	3	3
San Diego	2	1
San Francisco	1	0
San Joaquin	2	0
San Luis Obispo	1	0
San Mateo	0	4
Santa Barbara	0	0
Santa Clara	0	3
Santa Cruz	0	1
Shasta	0	0
Sierra	0	0
Siskiyou	0	0
Solano	0	2
Sonoma	1	0
Stanislaus	0	0
Sutter	0	0
Tehama	0	0
Trinity	0	0
Tulare	1	0
Tuolumne	0	0
Ventura	0	0
Yolo	0	0
Yuba	0	0

*City health jurisdictions not included in county total.

Figure 8. Varicella hospitalizations and deaths by age group – California, 2015

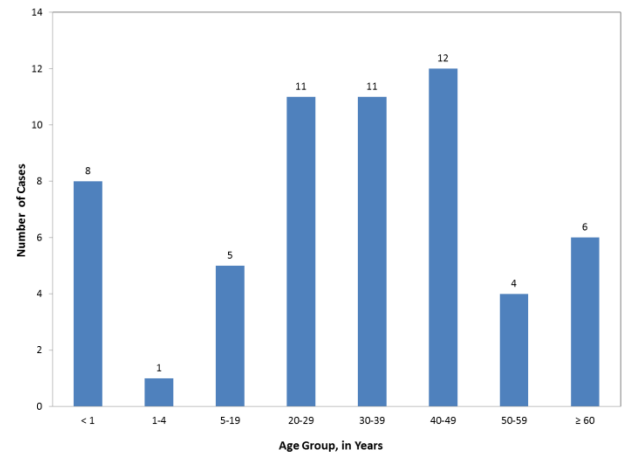
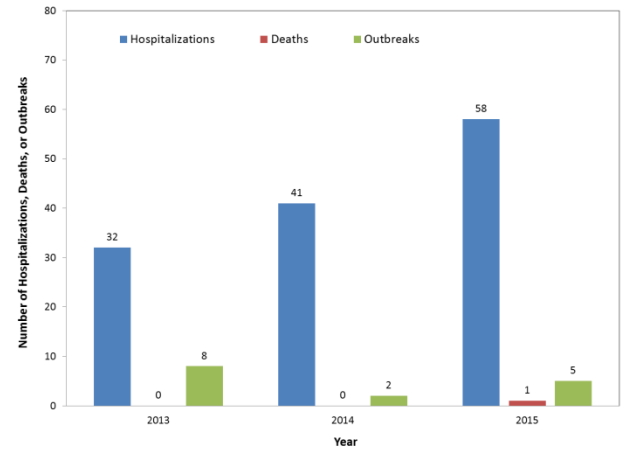


Figure 9. Varicella hospitalizations, deaths, and outbreaks – California, 2013–2015



SELECTED RESOURCES

The California Department of Public Health Immunization Branch's Website

<http://www.cdph.ca.gov/programs/immunize/Pages/default.aspx>

Visit the Immunization Branch website for information related to immunizations or vaccine-preventable diseases.

CDC Pink Book

<http://www.cdc.gov/vaccines/pubs/pinkbook/index.html>

Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Hamborsky J, Kroger A, Wolfe S, eds. 13th ed. Washington D.C. Public Health Foundation, 2015.

This CDC resource provides comprehensive information on routinely used vaccines and the diseases they prevent.

CDC Yellow Book

<http://wwwnc.cdc.gov/travel/page/yellowbook-home-2014/>

Centers for Disease Control and Prevention. CDC Health Information for International Travel 2016. New York: Oxford University Press; 2016.

This CDC resource provides helpful guidance about health risks associated with international travel and travel vaccines.

CDC Manual for the Surveillance of Vaccine-Preventable Diseases

<http://www.cdc.gov/vaccines/pubs/surv-manual/index.html>

Centers for Disease Control and Prevention. Manual for the surveillance of vaccine-preventable diseases. Centers for Disease Control and Prevention, Atlanta, GA, 2008.

This CDC resource provides current guidelines for those directly involved in surveillance of vaccine-preventable diseases, including local health department personnel.

VACCINE-PREVENTABLE DISEASE SUMMARY TABLES

Vaccine-Preventable Disease Surveillance in California

Table 19. Invasive *Haemophilus influenzae* infection cases <15 years of age, by local health jurisdiction and year of disease onset – California, 2011–2015

	2011		2012		2013		2014		2015†	
	All types	Hib	All types	Hib	All types	Hib	All types	Hib	All types	Hib
CALIFORNIA	42	1	32	0	46	0	40	0	65	1
Alameda	3	0	3	0	1	0	2	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	1	0
Butte	0	0	0	0	0	0	1	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	1	0
Del Norte	0	0	0	0	0	0	0	0	0	0
El Dorado	0	0	0	0	0	0	1	0	0	0
Fresno	1	0	1	0	6	0	3	0	5	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	1	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	14	0	7	0	12	0	8	0	17	1
City of Long Beach*	0	0	0	0	0	0	2	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	1	0
Marin	0	0	0	0	1	0	0	0	0	0
Mariposa	0	0	0	0	0	0	0	0	0	0
Mendocino	2	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	2	0	1	0	0	0	0	0	0	0
Napa	1	0	0	0	0	0	1	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0
Orange	1	0	1	0	0	0	1	0	2	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	5	0	3	0	4	0
Sacramento	2	0	1	0	5	0	1	0	3	0
San Benito	0	0	0	0	0	0	0	0	0	0
San Bernardino	3	0	2	0	2	0	2	0	3	0
San Diego	3	1	4	0	1	0	3	0	2	0
San Francisco	0	0	1	0	0	0	2	0	0	0
San Joaquin	0	0	2	0	1	0	0	0	4	0
San Luis Obispo	0	0	0	0	0	0	2	0	1	0
San Mateo	2	0	1	0	1	0	0	0	0	0
Santa Barbara	1	0	0	0	2	0	1	0	1	0
Santa Clara	1	0	1	0	2	0	4	0	6	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	1	0	0	0	0	0	0	0
Solano	0	0	0	0	0	0	0	0	1	0
Sonoma	0	0	0	0	0	0	0	0	0	0
Stanislaus	2	0	0	0	2	0	0	0	1	0
Sutter	0	0	0	0	0	0	0	0	0	0
Tehama	0	0	0	0	0	0	1	0	0	0
Trinity	0	0	0	0	0	0	0	0	0	0
Tulare	2	0	2	0	1	0	1	0	3	0
Tuolumne	0	0	0	0	0	0	0	0	0	0
Ventura	0	0	1	0	2	0	0	0	3	0
Yolo	0	0	0	0	1	0	0	0	2	0
Yuba	0	0	0	0	0	0	0	0	0	0

* City health jurisdictions not included in county total.

† In 2015, CSTE changed the *Haemophilus influenzae* case definition.

Vaccine-Preventable Disease Surveillance in California

Table 20. Hepatitis A infection cases and incidence rates per 100,000 population, by local health jurisdiction and year of disease onset – California, 2011–2015

	2011		2012		2013		2014		2015	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
CALIFORNIA	161	0.43	210	0.55	254	0.67	146	0.37	181	0.46
Alameda	6	0.43	2	0.14	6	0.41	9	0.61	6	0.40
City of Berkeley*	0	0.00	1	0.87	1	0.86	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	1	0.45	0	0.00	0	0.00	2	0.89	1	0.45
Calaveras	0	0.00	0	0.00	0	0.00	0	0.00	1	2.23
Colusa	0	0.00	0	0.00	1	4.63	0	0.00	0	0.00
Contra Costa	2	0.19	5	0.47	10	0.92	3	0.27	6	0.54
Del Norte	0	0.00	0	0.00	0	0.00	0	0.00	1	3.69
El Dorado	0	0.00	1	0.55	5	2.73	0	0.00	1	0.55
Fresno	1	0.11	3	0.32	3	0.31	0	0.00	0	0.00
Glenn	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Humboldt	0	0.00	1	0.74	3	2.23	1	0.74	1	0.74
Imperial	2	1.13	5	2.81	0	0.00	0	0.00	1	0.54
Inyo	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Kern	6	0.71	5	0.58	4	0.46	3	0.34	5	0.57
Kings	0	0.00	1	0.66	0	0.00	0	0.00	1	0.67
Lake	0	0.00	1	1.55	1	1.55	1	1.54	1	1.54
Lassen	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Los Angeles	44	0.48	47	0.50	60	0.64	42	0.44	33	0.34
City of Long Beach*	0	0.00	1	0.21	6	1.28	5	1.06	3	0.63
City of Pasadena*	0	0.00	0	0.00	0	0.00	3	2.12	1	0.70
Madera	0	0.00	0	0.00	1	0.65	0	0.00	1	0.65
Marin	2	0.79	1	0.39	0	0.00	1	0.39	1	0.38
Mariposa	0	0.00	0	0.00	1	5.41	0	0.00	0	0.00
Mendocino	1	1.14	0	0.00	2	2.26	0	0.00	0	0.00
Merced	1	0.39	2	0.77	0	0.00	0	0.00	0	0.00
Modoc	0	0.00	0	0.00	1	10.79	0	0.00	0	0.00
Mono	0	0.00	0	0.00	0	0.00	1	6.87	0	0.00
Monterey	2	0.48	0	0.00	2	0.47	0	0.00	1	0.23
Napa	0	0.00	0	0.00	0	0.00	0	0.00	9	6.35
Nevada	0	0.00	1	1.02	2	2.04	1	1.02	0	0.00
Orange	16	0.53	25	0.81	24	0.77	14	0.45	17	0.54
Placer	0	0.00	0	0.28	0	0.00	0	0.00	3	0.81
Plumas	0	0.00	1	0.00	0	0.00	0	0.00	0	0.00
Riverside	4	0.18	0	0.44	9	0.40	7	0.30	13	0.56
Sacramento	4	0.28	10	0.49	4	0.35	3	0.21	3	0.20
San Benito	0	0.00	7	0.00	0	0.00	0	0.00	0	0.00
San Bernardino	8	0.39	0	0.24	10	0.48	2	0.10	4	0.19
San Diego	12	0.38	5	1.20	40	1.26	14	0.44	22	0.67
San Francisco	5	0.61	38	0.61	4	0.48	6	0.36	5	0.58
San Joaquin	4	0.58	5	0.57	3	0.43	2	0.28	7	0.96
San Luis Obispo	0	0.00	4	1.48	2	0.74	0	0.00	0	0.00
San Mateo	8	1.10	4	0.14	9	1.21	1	0.13	2	0.26
Santa Barbara	1	0.23	1	0.23	1	0.23	2	0.46	2	0.45
Santa Clara	12	0.66	1	0.49	7	0.38	10	0.53	6	0.31
Santa Cruz	3	1.13	9	0.74	7	2.58	3	1.10	0	0.00
Shasta	1	0.56	2	0.00	3	1.68	2	1.12	0	0.00
Sierra	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Siskiyou	1	2.23	0	2.20	1	2.21	0	0.00	0	0.00
Solano	2	0.48	1	0.48	3	0.71	0	0.00	1	0.23
Sonoma	1	0.21	2	0.41	2	0.41	1	0.20	3	0.60
Stanislaus	2	0.39	2	0.38	4	0.76	3	0.57	3	0.56
Sutter	1	1.06	2	0.00	0	0.00	1	0.00	1	1.02
Tehama	0	0.00	0	0.00	0	0.00	0	0.00	1	1.56
Trinity	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Tulare	4	0.89	0	0.00	4	0.88	1	0.22	5	1.08
Tuolumne	0	0.00	0	1.85	0	0.00	0	0.00	0	0.00
Ventura	3	0.36	1	1.56	7	0.83	2	0.24	3	0.35
Yolo	1	0.49	13	0.00	1	0.48	0	0.00	4	1.88
Yuba	0	0.00	0	0.00	0	0.00	0	0.00	2	2.64

* City health jurisdictions not included in county total.

Vaccine-Preventable Disease Surveillance in California

Table 21. Acute hepatitis B infection cases and incidence rates per 100,000 population, by local health jurisdiction and year of disease onset – California, 2011–2015

	2011		2012		2013		2014		2015	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
CALIFORNIA	155	0.41	141	0.37	139	0.36	109	0.28	159	0.41
Alameda	5	0.35	6	0.42	6	0.41	5	0.34	2	0.13
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	2	0.90	2	0.90	1	0.45	3	1.34
Calaveras	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Colusa	1	4.62	0	0.00	0	0.00	0	0.00	0	0.00
Contra Costa	0	0.00	2	0.19	2	0.18	2	0.18	7	0.63
Del Norte	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
El Dorado	0	0.00	1	0.55	0	0.00	0	0.00	2	1.09
Fresno	4	0.42	2	0.21	4	0.42	3	0.31	4	0.41
Glenn	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Humboldt	0	0.00	1	0.74	0	0.00	0	0.00	0	0.00
Imperial	0	0.00	0	0.00	2	1.11	1	0.55	0	0.00
Inyo	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Kern	2	0.24	10	1.17	3	0.35	3	0.34	7	0.79
Kings	1	0.66	0	0.00	0	0.00	0	0.00	0	0.00
Lake	1	1.55	0	0.00	0	0.00	1	1.54	0	0.00
Lassen	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Los Angeles†	57	0.61	39	0.42	54	0.57	41	0.43	51	0.53
City of Long Beach*	0	0.00	0	0.00	4	0.85	3	0.63	4	0.84
City of Pasadena*	1	0.72	1	0.71	3	2.12	1	0.70	1	0.70
Madera	2	1.32	0	0.00	2	1.32	1	0.65	2	1.29
Marin	0	0.00	1	0.39	0	0.00	0	0.00	0	0.00
Mariposa	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Mendocino	1	1.15	0	0.00	0	0.00	0	0.00	0	0.00
Merced	3	1.15	0	0.00	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	4	0.95	0	0.00	0	0.00	3	0.69
Napa	0	0.00	0	0.00	1	0.72	0	0.00	0	0.00
Nevada	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Orange	12	0.39	7	0.23	12	0.39	7	0.22	10	0.32
Placer	1	0.28	0	0.00	2	0.55	0	0.00	2	0.54
Plumas	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Riverside	5	0.22	17	0.75	3	0.13	4	0.17	2	0.09
Sacramento	5	0.35	5	0.35	4	0.27	0	0.00	3	0.20
San Benito	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
San Bernardino	8	0.39	12	0.58	7	0.33	9	0.43	13	0.61
San Diego	19	0.61	14	0.44	9	0.28	7	0.22	12	0.37
San Francisco	7	0.85	2	0.24	4	0.47	0	0.00	4	0.46
San Joaquin	2	0.29	3	0.43	2	0.28	4	0.56	4	0.55
San Luis Obispo	0	0.00	1	0.37	0	0.00	1	0.36	0	0.00
San Mateo	3	0.41	1	0.14	2	0.27	1	0.13	5	0.66
Santa Barbara	2	0.47	1	0.23	1	0.23	1	0.23	0	0.00
Santa Clara	7	0.39	5	0.27	4	0.21	4	0.21	4	0.21
Santa Cruz	0	0.00	0	0.00	0	0.00	1	0.37	0	0.00
Shasta	0	0.00	0	0.00	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	0	0.00	0	0.00	1	2.24	0	0.00
Solano	0	0.00	0	0.00	0	0.00	0	0.00	1	0.23
Sonoma	0	0.00	0	0.00	0	0.00	1	0.20	2	0.40
Stanislaus	2	0.39	1	0.19	5	0.95	2	0.38	4	0.74
Sutter	0	0.00	0	0.00	0	0.00	0	0.00	1	1.02
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	2	0.44	0	0.00	3	0.65	1	0.22
Tuolumne	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ventura	0	0.00	1	0.12	0	0.00	0	0.00	3	0.35
Yolo	0	0.00	0	0.00	0	0.00	0	0.00	1	0.47
Yuba	1	1.37	0	0.00	0	0.00	0	0.00	1	1.32

* City health jurisdictions not included in county total.

† One 2014 acute hepatitis B case was identified retrospectively in 2015.

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Table 22. Confirmed measles cases, by local health jurisdiction† and year of disease onset – California, 2011–2015

	2011	2012	2013	2014	2015
CALIFORNIA	32	8	18	75	125
Alameda	0	0	0	5	5
City of Berkeley*	1	0	1	1	1
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	0	4	1
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	1	0	0	1	0
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	7	6	3	13	28
City of Long Beach*	1	0	0	0	2
City of Pasadena*	0	0	0	1	3
Madera	0	0	0	0	0
Marin	0	0	0	0	2
Mariposa	0	0	0	0	0
Mendocino	3	0	1	0	0
Merced	2	0	0	0	1
Modoc	0	0	0	0	0
Mono	0	0	0	0	0
Monterey	0	0	1	2	0
Napa	0	0	0	0	0
Nevada	0	0	0	0	0
Orange	1	0	2	24	33
Placer	0	0	0	0	0
Plumas	0	0	0	0	0
Riverside	1	1	1	6	7
Sacramento	1	0	0	0	0
San Benito	1	0	0	0	0
San Bernardino	0	0	0	1	11
San Diego	4	0	2	6	12
San Francisco	0	0	3	0	0
San Joaquin	0	0	0	1	0
San Luis Obispo	1	0	0	0	0
San Mateo	1	1	0	4	4
Santa Barbara	0	0	0	0	0
Santa Clara‡	4	0	0	2	3
Santa Cruz	0	0	3	0	0
Shasta	0	0	0	1	0
Sierra	0	0	0	0	0
Siskiyou	0	0	0	0	0
Solano	0	0	0	0	1
Sonoma	1	0	0	0	0
Stanislaus	1	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	1	3	10
Yolo	0	0	0	0	1
Yuba	1	0	0	0	0

† County of residence or county where case was identified.

* City health jurisdictions not included in county total.

‡ One 2011 measles case was identified retrospectively in 2015. This patient was diagnosed with subacute sclerosing panencephalitis in 2015 and is now included in the 2011 case count. Measles virus isolated from this patient was genotype D4, the genotype that was circulating in Western Europe during the 2011 measles outbreak centered in France.

Vaccine-Preventable Disease Surveillance in California

Table 23. Invasive meningococcal disease cases and incidence rates per 100,000 population, by local health jurisdiction and year of disease onset – California, 2011–2015

	2011		2012		2013		2014		2015†	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
CALIFORNIA	110	0.29	88	0.23	111	0.29	56	0.14	49	0.13
Alameda	3	0.21	8	0.56	5	0.34	5	0.34	2	0.13
City of Berkeley*	1	0.87	2	1.72	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	1	0.45	1	0.45	0	0.00	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	1	4.55	0	0.00	1	4.48
Contra Costa	3	0.28	2	0.19	4	0.37	1	0.09	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	1	0.55	0	0.00
Fresno	2	0.21	6	0.63	4	0.42	2	0.21	1	0.10
Glenn	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Humboldt	0	0.00	0	0.00	0	0.00	0	0.00	1	0.74
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	5	0.59	9	1.05	1	0.12	4	0.46	0	0.00
Kings	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lake	0	0.00	1	1.55	0	0.00	1	1.54	0	0.00
Lassen	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Los Angeles	37	0.40	12	0.13	18	0.19	12	0.13	12	0.13
City of Long Beach*	0	0.00	0	0.00	1	0.21	0	0.00	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	3	1.97	0	0.00	0	0.00
Marin	0	0.00	0	0.00	2	0.77	0	0.00	0	0.00
Mariposa	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Mendocino	0	0.00	2	2.27	3	3.41	1	1.13	1	1.13
Merced	0	0.00	0	0.00	3	1.13	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	1	0.23	1	0.23	2	0.46
Napa	0	0.00	0	0.00	0	0.00	0	0.00	1	0.71
Nevada	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Orange	10	0.33	4	0.13	5	0.16	3	0.10	2	0.06
Placer	1	0.28	0	0.00	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	7	0.31	2	0.09	3	0.13	2	0.09	2	0.09
Sacramento	3	0.21	6	0.42	4	0.27	4	0.27	2	0.13
San Benito	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
San Bernardino	3	0.15	2	0.10	9	0.43	1	0.05	2	0.09
San Diego	4	0.13	8	0.25	15	0.47	9	0.28	3	0.09
San Francisco	8	0.98	4	0.48	4	0.47	2	0.23	5	0.58
San Joaquin	2	0.29	2	0.29	1	0.14	0	0.00	1	0.14
San Luis Obispo	0	0.00	2	0.74	0	0.00	0	0.00	1	0.36
San Mateo	1	0.14	2	0.27	1	0.13	1	0.13	2	0.26
Santa Barbara	2	0.47	1	0.23	6	1.38	0	0.00	1	0.22
Santa Clara	5	0.28	3	0.16	3	0.16	4	0.21	1	0.05
Santa Cruz	0	0.00	0	0.00	2	0.74	0	0.00	0	0.00
Shasta	3	1.69	1	0.56	1	0.56	0	0.00	0	0.00
Sierra	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Siskiyou	1	2.23	1	2.23	1	2.24	0	0.00	0	0.00
Solano	1	0.24	0	0.00	0	0.00	1	0.23	1	0.23
Sonoma	1	0.21	0	0.00	3	0.61	0	0.00	0	0.00
Stanislaus	0	0.00	1	0.19	0	0.00	0	0.00	1	0.19
Sutter	0	0.00	0	0.00	2	2.07	0	0.00	0	0.00
Tehama	4	6.29	1	1.57	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	1	0.22	3	0.66	1	0.22	1	0.22
Tuolumne	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ventura	0	0.00	3	0.36	1	0.12	0	0.00	1	0.12
Yolo	1	0.49	0	0.00	1	0.48	0	0.00	1	0.47
Yuba	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

* City health jurisdictions not included in county total.

† In 2015, CSTE changed the meningococcal disease case definition.

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Table 24. Confirmed and probable mumps cases, by local health jurisdiction and year of disease onset – California, 2011–2015

	2011	2012†	2013	2014	2015
CALIFORNIA	43	34	30	37	31
Alameda	2	1	1	1	0
City of Berkeley*	24	0	0	0	0
Alpine	0	0	0	0	0
Amador	0	0	0	0	0
Butte	0	1	0	1	0
Calaveras	0	0	1	0	0
Colusa	0	0	0	0	0
Contra Costa	2	0	2	1	3
Del Norte	0	0	0	0	0
El Dorado	0	0	0	0	0
Fresno	0	0	1	1	0
Glenn	0	0	0	0	0
Humboldt	0	1	0	0	0
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	3	13	9	9	14
City of Long Beach*	2	1	0	0	2
City of Pasadena*	0	0	0	1	0
Madera	0	0	0	0	0
Marin	0	1	0	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	1	0	0	1
Napa	0	0	0	0	0
Nevada	0	0	0	0	0
Orange	3	3	2	8	5
Placer	0	1	1	0	0
Plumas	0	0	0	0	0
Riverside	0	1	2	4	0
Sacramento	0	2	0	1	0
San Benito	0	0	0	0	0
San Bernardino	0	0	1	3	4
San Diego	1	1	2	2	0
San Francisco	3	0	2	0	2
San Joaquin	1	0	1	0	0
San Luis Obispo	0	0	0	0	0
San Mateo	0	1	1	0	0
Santa Barbara	1	1	1	0	0
Santa Clara	1	3	0	1	0
Santa Cruz	0	0	0	1	0
Shasta	0	0	0	0	0
Sierra	0	0	0	0	0
Siskiyou	0	0	0	0	0
Solano	0	2	0	0	0
Sonoma	0	0	0	0	0
Stanislaus	0	0	1	1	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	1	2	0
Yolo	0	0	1	0	0
Yuba	0	0	0	0	0

† In 2012, CSTE changed the mumps case definition.

* City health jurisdictions not included in county total.

Vaccine-Preventable Disease Surveillance in California

Table 25. Pertussis disease cases and incidence rates per 100,000 population, by local health jurisdiction and year of disease onset – California, 2011–2015

	2011		2012		2013		2014		2015	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
CALIFORNIA	3014	8.00	1025	2.69	2535	6.61	11205	28.93	4706	12.04
Alameda	206	14.54	62	4.32	124	8.51	364	24.60	179	11.94
City of Berkeley*	3	2.61	6	5.16	13	11.06	55	46.14	10	8.29
Alpine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Amador	11	29.03	1	2.65	2	5.32	1	2.67	2	5.36
Butte	16	7.25	3	1.35	33	14.86	33	14.76	8	3.57
Calaveras	5	11.01	0	0.00	2	4.43	17	37.77	1	2.23
Colusa	1	4.62	0	0.00	0	0.00	0	0.00	4	17.93
Contra Costa	114	10.72	24	2.23	69	6.33	474	43.00	181	16.21
Del Norte	0	0.00	0	0.00	0	0.00	2	7.36	0	0.00
El Dorado	11	6.08	3	1.66	4	2.20	36	19.74	27	14.76
Fresno	58	6.16	16	1.68	43	4.48	392	40.45	57	5.81
Glenn	1	3.52	0	0.00	0	0.00	1	3.47	2	6.90
Humboldt	15	11.10	1	0.74	5	3.71	149	110.85	56	41.54
Imperial	3	1.69	8	4.47	3	1.67	10	5.47	10	5.41
Inyo	0	0.00	1	5.39	0	0.00	0	0.00	0	0.00
Kern	49	5.77	2	0.23	30	3.46	167	19.07	145	16.39
Kings	6	3.97	0	0.00	2	1.33	16	10.71	6	4.00
Lake	3	4.64	2	3.09	3	4.65	3	4.62	6	9.23
Lassen	0	0.00	0	0.00	0	0.00	5	15.72	0	0.00
Los Angeles	611	6.57	211	2.25	343	3.63	2001	21.05	1141	11.92
City of Long Beach*	17	3.65	4	0.85	16	3.39	181	38.20	37	7.78
City of Pasadena*	15	10.75	1	0.71	2	1.42	22	15.50	8	5.62
Madera	8	5.29	0	0.00	10	6.58	47	30.53	6	3.87
Marin	26	10.22	5	1.96	184	71.25	273	104.79	53	20.26
Mariposa	1	5.48	0	0.00	0	0.00	0	0.00	0	0.00
Mendocino	3	3.44	1	1.14	6	6.81	10	11.29	9	10.18
Merced	27	10.39	0	0.00	1	0.38	9	3.36	13	4.81
Modoc	0	0.00	0	0.00	0	0.00	6	62.65	0	0.00
Mono	2	14.00	21	148.71	2	14.39	0	0.00	0	0.00
Monterey	38	9.07	17	4.02	49	11.51	129	30.06	76	17.44
Napa	11	8.01	6	4.32	13	9.33	137	97.36	49	34.60
Nevada	2	2.03	5	5.10	71	72.72	16	16.30	3	3.06
Orange	142	4.65	74	2.40	114	3.66	447	14.24	162	5.12
Placer	19	5.34	11	3.06	83	22.78	120	32.58	49	13.19
Plumas	4	20.07	0	0.00	1	5.06	1	5.07	2	10.17
Riverside	166	7.45	46	2.04	80	3.51	469	20.35	182	7.81
Sacramento	69	4.81	34	2.35	71	4.88	446	30.27	287	19.27
San Benito	3	5.37	1	1.78	1	1.76	11	19.24	7	12.16
San Bernardino	115	5.57	54	2.60	38	1.82	206	9.76	91	4.28
San Diego	398	12.69	161	5.07	408	12.71	2018	62.14	895	27.32
San Francisco	71	8.67	30	3.61	59	7.00	131	15.37	69	8.00
San Joaquin	28	4.03	15	2.14	26	3.68	214	29.84	81	11.12
San Luis Obispo	15	5.56	14	5.15	17	6.23	45	16.35	22	7.97
San Mateo	58	7.96	23	3.11	104	13.91	128	16.96	40	5.25
Santa Barbara	18	4.23	11	2.55	29	6.66	120	27.26	66	14.82
Santa Clara	175	9.66	45	2.45	252	13.52	538	28.48	149	7.78
Santa Cruz	22	8.29	13	4.85	54	19.96	166	61.05	79	28.77
Shasta	27	15.20	2	1.12	7	3.92	33	18.42	15	8.39
Sierra	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Siskiyou	0	0.00	2	4.47	5	11.20	7	15.68	6	13.46
Solano	12	2.89	10	2.39	15	3.56	144	33.83	42	9.78
Sonoma	116	23.82	18	3.67	51	10.32	704	141.47	34	6.79
Stanislaus	43	8.29	11	2.10	16	3.03	92	17.30	38	7.06
Sutter	1	1.05	0	0.00	2	2.07	8	8.24	2	2.05
Tehama	1	1.57	0	0.00	0	0.00	38	59.52	5	7.82
Trinity	0	0.00	0	0.00	0	0.00	6	44.07	6	44.17
Tulare	77	17.20	27	5.97	25	5.48	37	8.04	86	18.49
Tuolumne	4	7.25	1	1.82	2	3.64	16	29.26	9	16.51
Ventura	162	19.48	15	1.79	37	4.39	347	40.92	107	12.54
Yolo	5	2.46	6	2.92	4	1.92	147	70.05	83	39.01
Yuba	0	0.00	1	1.36	4	5.38	10	13.34	3	3.97

* City health jurisdictions not included in county total.

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Table 26. Pertussis disease cases and incidence rates per 1,000 population for infants < 4 months of age, by local health jurisdiction and year of disease onset – California, 2011–2015

	2011		2012		2013		2014		2015	
	Cases	Rates**	Cases	Rates**	Cases	Rates**	Cases	Rates**	Cases	Rates**
CALIFORNIA	437	2.58	127	0.77	196	1.18	534	3.17	326	1.92
Alameda	13	2.12	3	0.49	5	0.80	4	0.66	8	1.30
City of Berkeley*	0	0.00	0	0.00	0	0.00	1	3.42	0	0.00
Alpine	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Amador	1	11.49	0	0.00	0	0.00	0	0.00	0	0.00
Butte	0	0.00	0	0.00	2	2.59	5	6.46	1	1.29
Calaveras	1	8.84	0	0.00	0	0.00	0	0.00	0	0.00
Colusa	0	0.00	0	0.00	0	0.00	0	0.00	1	9.13
Contra Costa	12	105.77	3	0.75	2	0.49	8	1.94	2	0.48
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	2	3.92	1	1.93
Fresno	7	12.94	5	0.94	17	3.26	40	7.56	11	2.05
Glenn	0	0.00	0	0.00	0	0.00	1	7.55	0	0.00
Humboldt	3	21.39	0	0.00	1	1.98	1	2.11	3	6.35
Imperial	2	3.94	2	1.97	2	1.97	4	4.03	4	4.00
Inyo	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Kern	10	159.31	0	0.00	5	1.05	21	4.45	16	3.34
Kings	0	0.00	0	0.00	0	0.00	4	5.18	1	1.30
Lake	2	2.42	1	4.16	1	4.11	0	0.00	0	0.00
Lassen	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Los Angeles	122	2.96	32	0.80	39	0.96	137	3.23	97	2.28
City of Long Beach*	2	0.90	0	0.00	3	1.33	14	6.20	5	2.21
City of Pasadena*	2	3.30	0	0.00	0	0.00	0	0.00	0	0.00
Madera	2	2.49	0	0.00	4	5.29	5	6.61	2	2.64
Marin	0	0.00	0	0.00	1	1.28	0	0.00	1	1.31
Mariposa	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Mendocino	0	0.00	0	0.00	1	2.89	0	0.00	0	0.00
Merced	3	2.10	0	0.00	0	0.00	2	1.41	3	2.09
Modoc	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Mono	1	-	1	-	0	0.00	0	0.00	0	0.00
Monterey	10	4.42	2	0.89	3	1.38	9	4.08	12	5.35
Napa	1	2.01	0	0.00	1	2.13	0	0.00	4	8.03
Nevada	0	0.00	0	0.00	1	3.73	0	0.00	0	0.00
Orange	21	1.65	10	0.79	9	0.72	48	3.86	17	1.36
Placer	1	0.78	1	0.81	2	1.63	1	0.81	3	2.41
Plumas	0	0.00	0	0.00	0	0.00	0	0.00	1	17.18
Riverside	37	3.59	7	0.70	10	1.00	37	3.68	20	1.96
Sacramento	9	1.34	6	0.92	4	0.62	9	1.38	6	0.92
San Benito	1	3.95	0	0.00	0	0.00	0	0.00	0	0.00
San Bernardino	21	2.01	9	0.90	6	0.59	27	2.60	12	1.15
San Diego	73	4.93	18	1.23	28	1.91	70	4.80	46	3.15
San Francisco	10	3.38	3	1.02	4	1.31	1	0.33	0	0.00
San Joaquin	8	2.28	2	0.60	8	2.39	8	2.33	6	1.71
San Luis Obispo	0	0.00	4	4.57	1	1.14	3	3.34	1	1.10
San Mateo	5	1.65	0	0.00	4	1.32	3	1.03	1	0.35
Santa Barbara	3	1.57	0	0.00	3	1.60	7	3.63	4	2.04
Santa Clara	11	1.37	5	0.64	19	2.35	20	2.54	7	0.89
Santa Cruz	1	0.92	1	0.93	0	0.00	2	1.98	1	0.97
Shasta	5	7.19	0	0.00	0	0.00	1	1.45	0	0.00
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	0	0.00
Solano	1	0.58	3	1.79	3	1.77	3	1.78	3	1.76
Sonoma	2	1.13	1	0.60	0	0.00	4	2.26	1	0.56
Stanislaus	10	3.87	1	0.39	3	1.20	3	1.16	8	3.06
Sutter	1	2.26	0	0.00	0	0.00	0	0.00	0	0.00
Tehama	0	0.00	0	0.00	0	0.00	1	4.03	2	7.96
Trinity	0	0.00	0	0.00	0	0.00	1	-	1	-
Tulare	13	4.82	5	1.88	2	0.78	9	3.35	11	4.05
Tuolumne	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ventura	9	2.46	0	0.00	2	0.57	12	3.43	2	0.57
Yolo	1	1.25	1	1.31	0	0.00	4	5.02	0	0.00
Yuba	0	0.00	1	2.47	0	0.00	2	4.97	1	2.48

* City health jurisdictions not included in county total.

** Rates were suppressed if the population denominator minus the number of cases is less than or equal to 50; denominators adjusted to account for partial birth cohort.

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Table 27. Confirmed rubella and congenital rubella syndrome (CRS) cases, by local health jurisdiction and year of disease onset – California, 2011–2015

	2011		2012		2013		2014		2015	
	Rubella	CRS	Rubella	CRS	Rubella	CRS	Rubella	CRS	Rubella	CRS
CALIFORNIA	0	0	1	0	0	0	2	0	0	0
Alameda	0	0	0	0	0	0	1	0	0	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	0	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	1	0	0	0	1	0	0	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.

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Table 28. Probable tetanus cases, by local health jurisdiction and year of disease onset – California, 2011–2015

	2011	2012	2013	2014	2015
CALIFORNIA	3	4	4	4	3
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	1	0	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	1	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	0	0	1	0	1
City of Long Beach*	0	0	0	1	0
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	1	0	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	1	1	0	2	1
Placer	0	0	0	0	0
Plumas	0	0	0	0	0
Riverside	0	0	0	0	1
Sacramento	0	1	0	0	0
San Benito	0	0	0	0	0
San Bernardino	0	1	0	0	0
San Diego	1	0	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	1	0	0	0	0
Santa Clara	0	0	1	0	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	1	0	0
Yolo	0	0	0	0	0
Yuba	0	0	0	0	0

* City health jurisdictions not included in county total.

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Table 29. Confirmed and probable varicella hospitalizations and deaths, by local health jurisdiction and year of disease onset – California, 2011–2015

	2011 [†]	2012 [‡]	2013	2014	2015 [‡]
CALIFORNIA	48	37	32	41	58
Alameda	0	2	1	5	10
City of Berkeley*	0	0	0	0	2
Alpine	0	0	0	0	0
Amador	0	0	0	0	0
Butte	0	0	0	0	1
Calaveras	0	0	0	0	0
Colusa	0	0	0	0	0
Contra Costa	2	2	3	1	0
Del Norte	0	0	0	0	0
El Dorado	0	0	0	0	0
Fresno	2	0	2	5	0
Glenn	0	0	0	0	0
Humboldt	0	0	0	1	0
Imperial	0	1	0	0	0
Inyo	0	0	0	0	0
Kern	0	0	0	1	0
Kings	0	0	0	0	0
Lake	0	0	0	0	1
Lassen	0	0	0	0	0
Los Angeles	14	11	8	9	12
City of Long Beach*	0	0	0	0	0
City of Pasadena*	0	1	1	0	0
Madera	0	0	0	0	0
Marin	0	0	0	0	1
Mariposa	0	0	0	0	0
Mendocino	0	0	0	0	0
Merced	0	1	0	0	0
Modoc	0	0	0	0	0
Mono	0	0	0	0	0
Monterey	1	0	0	0	1
Napa	0	0	0	0	0
Nevada	0	0	0	0	0
Orange	1	6	4	4	9
Placer	0	1	0	0	0
Plumas	0	0	0	0	0
Riverside	2	2	2	3	5
Sacramento	3	0	1	1	2
San Benito	0	0	0	0	0
San Bernardino	7	0	1	3	3
San Diego	10	5	2	2	1
San Francisco	0	1	2	1	0
San Joaquin	1	1	0	2	0
San Luis Obispo	1	0	0	1	0
San Mateo	1	2	1	0	4
Santa Barbara	0	0	1	0	0
Santa Clara	0	1	1	0	3
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	1	0	2
Sonoma	1	0	0	1	0
Stanislaus	0	0	0	0	0
Sutter	1	0	0	0	0
Tehama	0	0	0	0	0
Trinity	0	0	0	0	0
Tulare	0	0	0	1	0
Tuolumne	0	0	1	0	0
Ventura	0	0	0	0	0
Yolo	1	0	0	0	0
Yuba	0	0	0	0	0

* City health jurisdictions not included in county total.

† Includes two deaths

‡ Includes one death