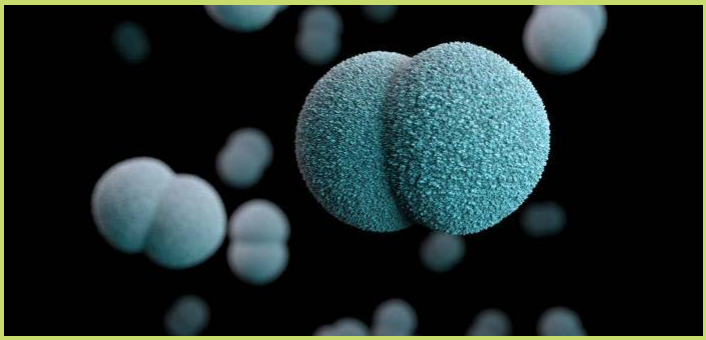
SAN DIEGO COUNTY ANNUAL COMMUNICABLE DISEASE REPORT

2017

COUNTY OF SAN DIEGO HHSA HEALTH AND HUMAN SERVICES AGENCY

LIVE WELL SAN DIEGO



County of San Diego, Health and Human Services Agency
Epidemiology and Immunization Services Branch

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County of San Diego
Health and Human Services Agency
Public Health Services

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This report was prepared by Marjorie A. Richardson, MPH, and Jennifer A. Nelson, MPH.

We would also like to thank the subject matter experts and all other Epidemiology and Immunization Program staff who made contributions to this report.

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Live Well San Diego is a regional vision adopted by the San Diego County Board of Supervisors in 2010 that aligns the efforts of County government, community partners and individuals to help all San Diego County residents be healthy, safe, and thriving. The vision includes three components. *Building Better Health,* adopted on July 13, 2010, focuses on improving the health of residents and supporting healthy choices; *Living Safely,* adopted on October 9, 2012, focuses on protecting residents from crime and abuse, making neighborhoods safe, and supporting resilient communities; and, *Thriving,* adopted on October 21, 2014, focuses on cultivating opportunities for all people to grow, connect and enjoy the highest quality of life.

Cover photos: Top right and top left: County of San Diego. All other photos obtained from the Centers for Disease Control and Prevention Public Health Image Library. Middle right: CDC/ Sarah Bailey Cutchin. Bottom right: CDC/ Dr. Christopher Paddock. Bottom left: CDC/ National Center for Emerging and Zoonotic Infectious Diseases (NCEZID).

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INTRODUCTION

The purpose of this report is to provide an overview of select communicable diseases in San Diego County in 2017. It is intended to serve as a resource for the medical community and to inform the general public.

The Epidemiology and Immunization Services Branch (EISB) in Public Health Services (PHS), a department of the County of San Diego Health and Human Services Agency (HHSA), is responsible for registering, investigating, and monitoring reports of numerous communicable diseases, with the goals of preventing morbidity and mortality and protecting the health of the community. Important components of meeting these goals are interviewing case-patients and taking direct public health action as a result. Equally important, however, is using the data collected via the reports and interviews to describe the characteristics of cases and review trends over time. This type of analysis may help detect outbreaks and suggest additional, population-based public health prevention and control measures.

This report includes descriptive summaries highlighting 29 diseases that are commonly reported or are of particular public health interest. Also included are an influenza season summary and an outbreak investigation summary. Diseases investigated by other PHS branches or programs are not covered in this report. HIV disease reports are managed by the HIV Epidemiology Unit; sexually transmitted disease (chlamydia, gonorrhea, syphilis, chancroid, pelvic inflammatory disease) reports are managed by the HIV, STD, and Hepatitis Branch; and tuberculosis reports are managed by the Tuberculosis Control and Refugee Health Branch. Data related to these diseases can be found on their respective websites. Case counts for all diseases investigated by PHS are available in a Five-Year Table of Reportable Diseases and Conditions on the Epidemiology Program Statistics and Reports website.

Data Sources

Communicable Disease Data

Title 17, California Code of Regulations (CCR), requires that health care providers (Sections 2500, 2593, 2641.5-2643.20, 2800-2812, and 2593) report over 80 diseases and conditions, as well as the occurrence of any unusual disease, and outbreaks of any disease, to the local health department. Health care providers, as defined by Section 2500, can include physicians, surgeons, veterinarians, podiatrists, nurse practitioners, physician assistants, registered nurses, nurse midwives, school nurses, infection control practitioners, medical examiners, coroners, and dentists. Laboratories are also required to report certain communicable diseases (Section 2505). Local health departments may make additional diseases locally reportable. Not all diseases and conditions reportable at the state or local level are nationally notifiable. For a list of conditions

reportable in California, see *Reportable Diseases and Conditions* at the end of this document.

EISB enters the information from these reports, as well as information gathered during public health follow-up, into a local surveillance system. The San Diego County disease data presented in this report come from this local surveillance system.

Communicable disease data collected by EISB are reported to the California Department of Public Health (CDPH), and CDPH, in turn, reports cases to the Centers for Disease Control and Prevention (CDC). CDPH produces annual disease summaries, aggregating data from the 61 local health departments in the state. National data are made available each week in CDC's *Morbidity and Mortality Weekly Report*, as well as in annual summaries. State and national disease data for this report were obtained from these sources. Final California and United States data for 2017 were not available at the time of publication of this report; preliminary data were used when available. See *Resources* at the end of this document.

Communicable disease data are subject to some limitations. The number of cases reported to the local health department is likely an underestimate of the true burden of disease in the community. This can be due to several factors. Diseases that are asymptomatic or have less severe symptoms may be underreported as individuals may not present to a provider for care. Additionally, providers who are unaware of legal requirements may fail to report cases to the health department. This effect may be mitigated by dual-reporting laws in California, which also require reporting by laboratories. Many laboratories have automated reporting systems in place. However, providers may not order diagnostic tests, and for some diseases, diagnosis is based on clinical findings rather than laboratory tests.

Completeness of demographic data, such as race and ethnicity, may also vary by disease. While all diseases in this report are monitored by the health department, some require additional follow-up and investigation. Diseases that are investigated have more complete demographic information because interviews with case-patients provide opportunities to obtain additional information that may not have been provided in the original reports.

The data presented in this report are provisional as changes may occur due to late reporting or updated case information.

Surveillance Case Definitions

Except where otherwise noted in the disease-specific sections of this report, cases are classified based on the CDC/Council of State and Territorial Epidemiologists (CDC/CSTE) surveillance case definitions. Case criteria are national standards that allow for comparisons across jurisdictions. Cases can be defined based on a combination of clinical criteria and

laboratory criteria. Case definitions are reviewed regularly and are subject to change, which can affect case counts. Links to case definitions are listed in the "For more information" box of each disease-specific section as applicable.

Population Data

Population estimates of San Diego County residents, used in the calculation of rates of disease incidence, were obtained from annual population estimates provided by the San Diego Association of Governments (SANDAG). SANDAG's methodology is described on their website. Estimates for 2017 were not available at the time this report was published. The overall county estimate for 2017 used in this report is from the California Department of Finance July 1 estimates. The 2016 SANDAG estimates were used for calculating rates for demographic and geographic groups (e.g., age, zip code).

When sources for national and statewide data provided case counts but not incidence rates, rates were calculated using United States and California population estimates obtained from the United States Census Bureau American FactFinder website. Information on the Census Bureau population estimate methodology is available on their website.

Disease Information

Each disease-specific section includes information on the infectious agent, incubation period, mode of transmission, and symptoms. Most of this disease information was obtained from the Diseases and Conditions pages of the CDC website and the 19th edition of the *Control of Communicable Diseases Manual*. The 13th edition of the CDC *Epidemiology and Prevention of Vaccine-Preventable Diseases*, also known as the "Pink Book," was used as an additional source of information. Links to the CDC website corresponding to the disease of interest, as well as links to relevant chapters of the "Pink Book," are included in the "For more information" box of the disease-specific pages in this report.

Methods

The analyses presented in this report are descriptive and include counts, proportions, and rates. These measures are presented for several different groups: for San Diego County overall, by time period (year, month), by age group, and by zip code of residence.

Most rates presented are incidence rates. Incidence is a measure of the number of new cases of disease in a population within a given time period (in this report, a year). For a few chronic conditions (e.g., chronic hepatitis B, chronic hepatitis C, coccidioidomycosis), where it may not be known when the infection was acquired, the rates could more realistically be described as report rates. All rates are calculated per 100,000 population for ease of comparison. None of the rates are age-adjusted. Rates are generally not calculated for counts below five, and rates should be

interpreted with caution when counts are below 20. When counts are small, even small changes in the count can cause large changes in the rate, producing unstable rates. The San Diego County rates tend to vary more from year to year than the California and United States rates, which are based on larger overall numbers.

Most of the data included in this report are presented by CDC disease year, rather than calendar year. CDC uses disease years, with numbered weeks, for ease of comparing data from year to year. These weeks run from Sunday to Saturday. The disease year may differ by a few days from the calendar year. For example, disease year 2017 began on 1/1/2017 and ended on 12/30/2017.

San Diego County groups cases on the basis of the "episode date," which is the earliest available of onset, laboratory specimen collection, diagnosis, death, and report received dates. California also uses "episode date" to group cases. When reporting to CDC, states can choose which of several dates to use for grouping cases into weeks. This may vary from state to state and condition to condition. The only national data presented in this report are annual data, so these differences are less likely to be noticeable. Unless otherwise noted, the San Diego County data in this report are presented by disease year based on episode date.

Analysis was done using SAS software, Version 9.4. Copyright © 2002-2012 SAS Institute Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks of SAS Institute Inc., Cary, NC, USA. Maps were created using ArcGIS 10.5.1 for Desktop. Copyright © 1999-2015 Environmental Systems Research Institute, Inc.

Organization and Content

The report begins with a section giving an overview of the San Diego County population. This section presents SANDAG population estimates grouped into the same demographic categories used throughout the report; it provides context for the data presented in the disease sections. The individual disease sections follow, with one-to-three page summaries of 29 diseases, listed in alphabetical order. These are followed by an influenza season summary and an outbreak summary. Near the end of the report are demographic tables including counts by gender, age group, race/ethnicity, and HHSA service region for each disease highlighted in this report. The counts are included in these tables regardless of whether the subgroup counts were sufficient to display graphically in the disease sections. Finally, additional information, including zip codes by HHSA service region, reportable diseases and conditions, and resources are included at the end of the document.

The content and layout of the disease sections vary somewhat based on disease characteristics and case volume. However, there are some common components. All

sections begin with some basic "Disease Info": infectious agent, incubation, mode of transmission, and symptoms. Other common components include a "Key Points" box, which includes summary bullets of the data presented, and a "For more information" box, which includes links to websites (usually CDC, CDPH, and, when available, San Diego County) where readers can find more in-depth information about the disease, as well as the CDC/CSTE case criteria. These websites are also the primary sources for the disease information presented. Each section also contains "Notes" with additional details about case criteria, how long the disease has been reportable, caveats, and any other information necessary to understand the data presented.

Below are descriptions of the graphs and tables that may appear in the disease sections.

Number of Cases by Year

Each disease section features a bar graph with case count trends over time. The number of years included depends on when the disease became reportable and the number of years of reliable data in the San Diego County disease registry.

Incidence, San Diego County, California, and United States

Incidence rates per 100,000 population for 2013-2017 are presented in line graphs, which are included in most disease sections. These graphs compare incidence in San Diego County to incidence in California and the United States. National data may be omitted if the disease is not nationally notifiable. The graph may not be included at all if five years of data are not available or if neither California nor United States data are available. Incidence rates are calculated for San Diego County even if case counts are low. However, when case counts are low, rates should be considered unstable and interpreted with caution; they may vary considerably from year to year.

Cases by Month of Onset

This graph, included in most disease sections, displays case counts by month for 2017 as bars, compared to a line showing the average count by month over the previous three years. While all other data in this report are presented by CDC disease year, this graph presents the data by calendar year, grouped by "episode date" (see *Methods* for a definition of "episode date"). Usually, this will be the onset date, but in cases where onset date is unavailable (e.g., no interview with the case-patient was completed) or where the case is asymptomatic, another date is used. Which date is used most frequently may vary by disease. This graph may not be included if there are insufficient cases.

Cases and Rates by Age

Counts and rates by age group are presented using a bar and line graph. Case counts for six age groups (0-4 years, 5-14 years, 15-24 years, 45-64 years, and 65+ years) are displayed as bars, compared to a line showing the rates per 100,000

population by age group. When case counts are very low, this graph is not included. If counts are less than five across all age groups, rates are not calculated and only counts by age group are presented. When some of the age group counts are five or above, but others are below five, rates are presented for all groups. However, the rates for groups with low counts should be considered unstable and interpreted with caution.

Map of Rates by Zip Code

Choropleth maps display the rate per 100,000 population by zip code of residence at the time of report. The zip code of residence may not be the location where a person was exposed. In the case of chronic conditions, it also may not be the residence at time of diagnosis. Rates are calculated for each zip code with at least five cases. These are displayed using a color scheme where darker colors represent higher rates. Maps are only included when enough zip codes have case counts of at least five. A limited number of maps are presented. Whenever possible, maps include only 2017 data, but in some instances, multiple years of data are aggregated in order to allow for a geographic display of the data. One disease section includes a different type of map: the animal rabies map displays the points where rabid animals were found.

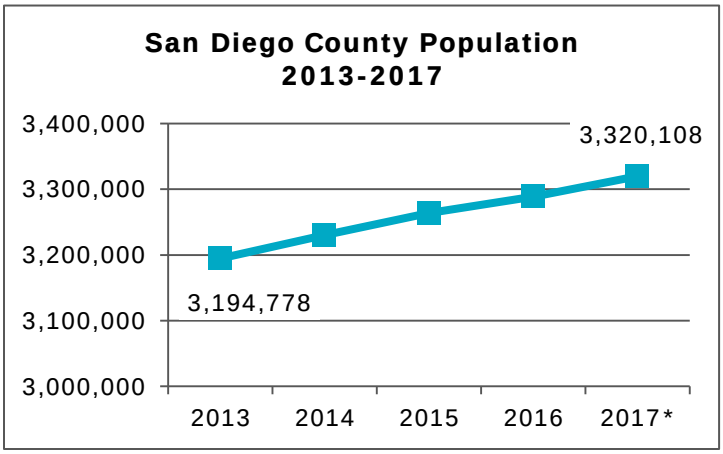
Clinical, Risk, and Laboratory Data

Whenever possible, clinical and risk data are presented. Generally, this requires sufficient case counts to make a summary of clinical or risk data possible and meaningful. Data must also be available, which may not be the case for diseases where an interview of case-patients is not conducted. In some cases, laboratory data are also included (e.g., etiology of meningitis cases). The specific variables summarized, as well as how the data are presented, depend on the characteristics of the disease and what information is available. Clinical, risk, and laboratory data are variously presented using tables, graphs, and infographics. When case counts are low and graphic representation is not possible, some clinical or risk data may be summarized in the “Key Points.”

Special Sections

The influenza season summary and the outbreak summaries are organized differently. The influenza season summary and norovirus and influenza outbreak summaries present data by fiscal year, focusing on fiscal year 2016-17. This convention better illustrates the seasonal nature of influenza and norovirus, both of which peak during the winter months. An overall outbreak summary covering all outbreaks investigated by EISB in 2017 is also included. Some of the graphs in the influenza summary section are adapted from the Influenza Watch, which the Epidemiology Program publishes weekly during influenza season. Similar to the disease sections, these sections include “Key Points,” “For more information,” “Notes,” and “Disease Info,” where applicable.

SAN DIEGO COUNTY POPULATION

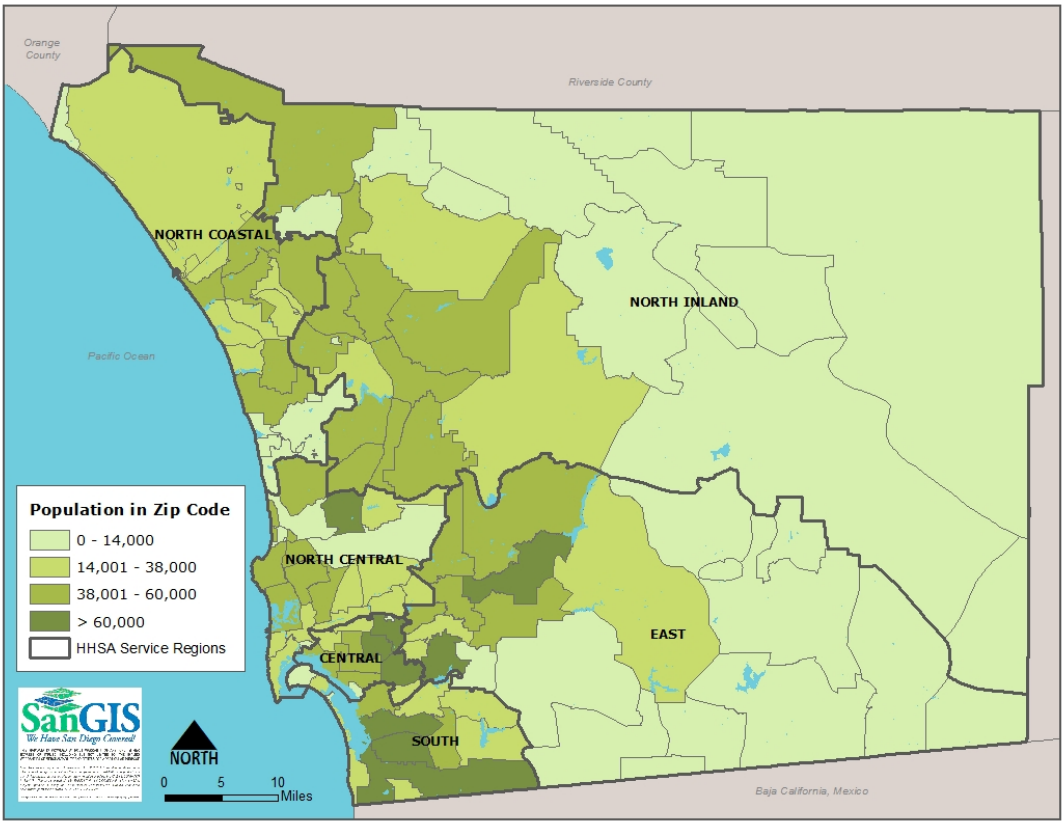


*2017 California Department of Finance July 1 estimate

HHSA Regions, 2016	Population	Percent
Central	501,207	15.2
East	481,051	14.6
North Central	651,326	19.8
North Coastal	548,202	16.7
North Inland	605,756	18.4
South	501,070	15.2
Total County Population	3,288,612	100.0

Demographics, 2016	Population	Percent
Gender		
Female	1,634,746	49.7
Male	1,653,866	50.3
Age		
0-4 years	214,365	6.5
5-14 years	392,302	11.9
15-24 years	478,627	14.6
25-44 years	966,609	29.4
45-64 years	806,208	24.5
65+ years	430,501	13.1
Race/Ethnicity		
American Indian or Alaska Native	14,116	0.4
Asian	377,680	11.5
Black	156,928	4.8
Hispanic	1,098,537	33.4
Native Hawaiian/Pacific Islander	13,369	0.4
White	1,521,860	46.3
Other	6,925	0.2
Two or More Races	99,197	3.0

San Diego County Population by Zip Code, 2016



Source:

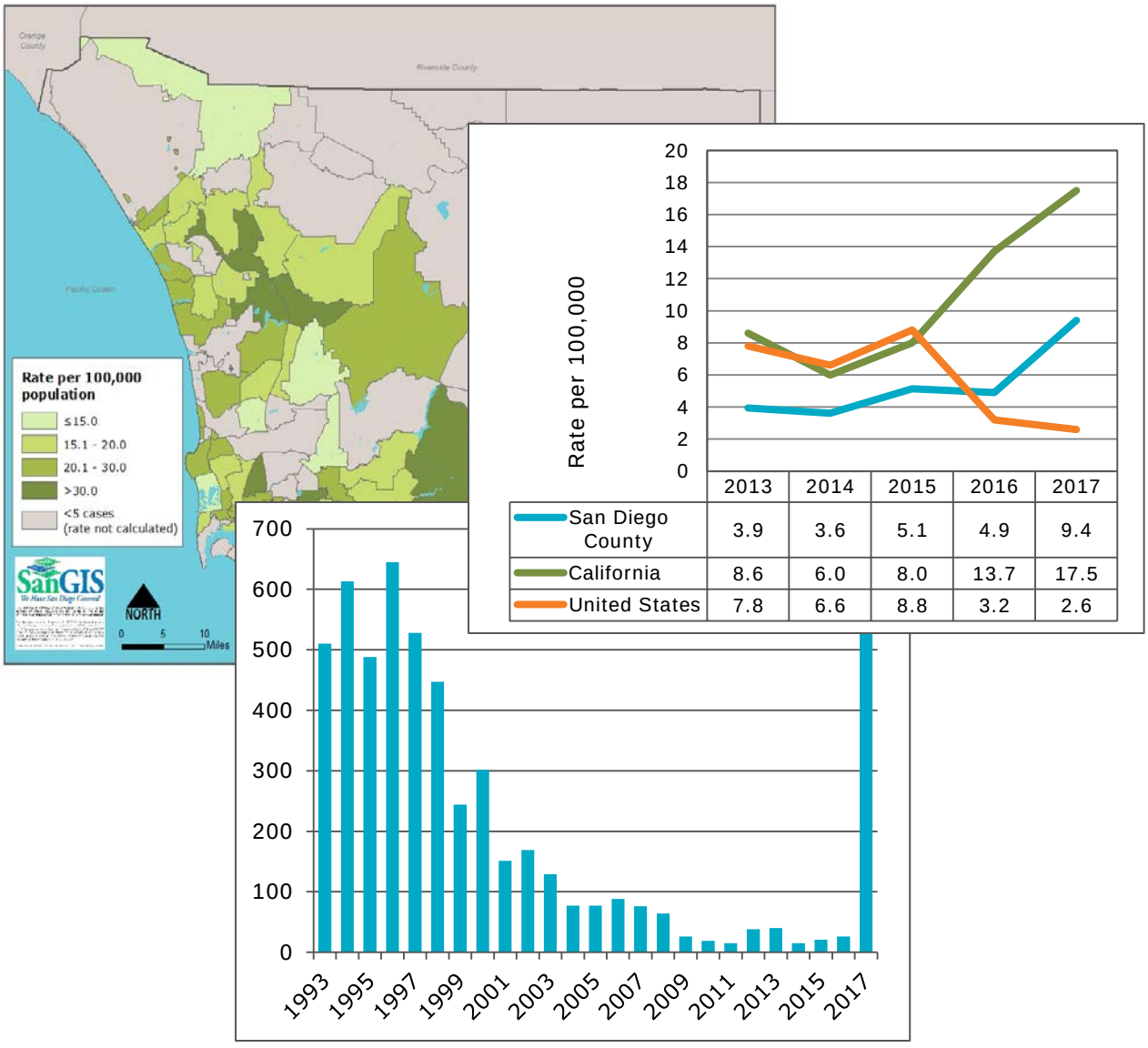
SANDAG population estimates, prepared 3/15/2017. SANDAG population estimates for 2017 were not available at time of publication; 2016 data are presented here instead. For more information on population estimates, including methodology, see www.sandag.org.

Notes:

1. Race/ethnicity combines two variables collected separately, race and ethnicity. Persons of any race with Hispanic ethnicity are included in the Hispanic category. The other categories are non-Hispanic.
2. Population estimates by Health and Human Services Agency (HHSA) service regions are based on zip code of residence. See *Zip Codes by HHSA Service Region* at the end of the document.

COMMUNICABLE DISEASE SUMMARIES

The following individual disease sections, listed alphabetically, are one-to-three page summaries that provide information and data about each disease using text, tables, and graphs. These descriptive summaries highlight 29 diseases that are commonly reported or are of particular public health interest.

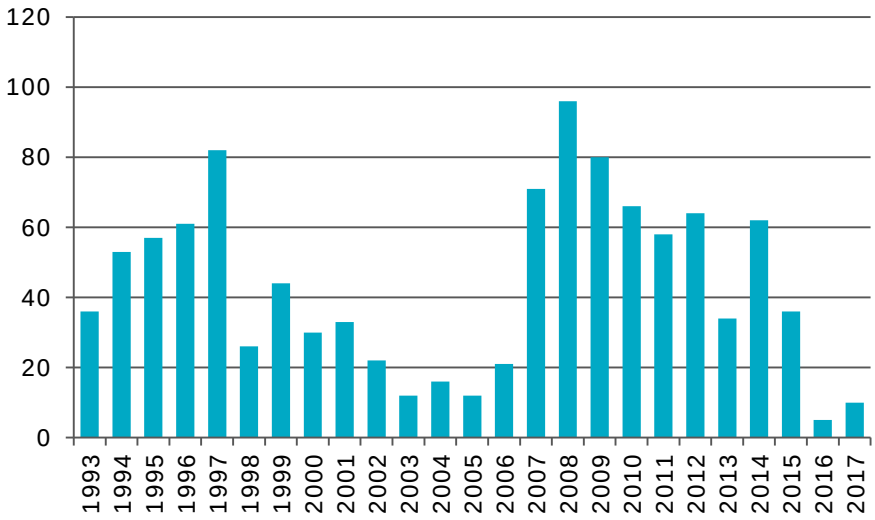


AMEBIASIS

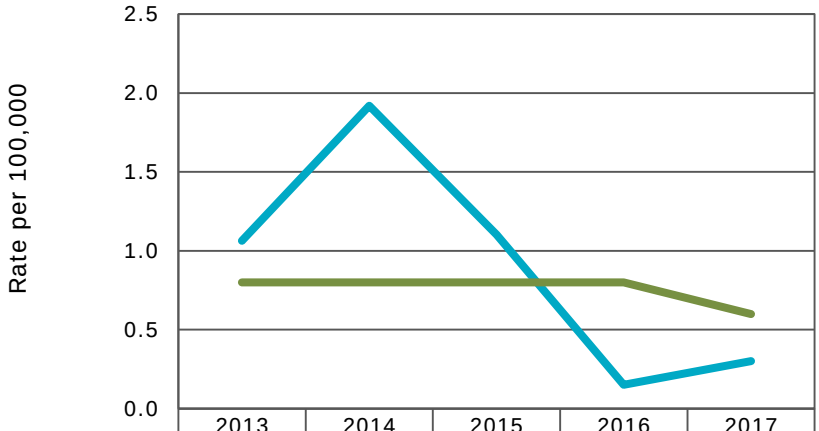
Disease Info

Infectious agent: *Entamoeba histolytica*, a protozoan parasite
Incubation: Usually 2-4 weeks, range of days to months or years
Mode of transmission: Fecal-oral, either person-to-person contact or ingestion of food or water containing amebic cysts
Symptoms: Frequently asymptomatic; gastrointestinal symptoms ranging from mild abdominal pain and diarrhea to severe abdominal pain, fever, and bloody or mucoid diarrhea; can cause extra-intestinal infection

Amebiasis Cases, San Diego County 1993-2017



Amebiasis Incidence, San Diego County and California, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	1.1	1.9	1.1	0.2	0.3
California	0.8	0.8	0.8	0.8	0.6

Key Points

- There were 10 cases of amebiasis among San Diego County residents in 2017. The significant decline evident in 2016 was due to a change in the case review criteria used by the County of San Diego Epidemiology and Immunization Services Branch.
- The incidence rate of amebiasis among San Diego County residents, which dropped substantially in 2016, remained low at 0.3 per 100,000 population in 2017. Incidence in California was stable just below 1.0 per 100,000 population during the past five years.
- The increase in San Diego County cases in the mid-2000s was largely the result of initiation of reporting by a County-sponsored refugee health screening program.
- All 2017 San Diego County cases were in adults aged 25 years or older.

For more information:

- Centers for Disease Control and Prevention (CDC) Amebiasis website
- CDC Health Information for International Travel (the Yellow Book) – Amebiasis
- California Department of Public Health (CDPH) Amebiasis website

Notes:

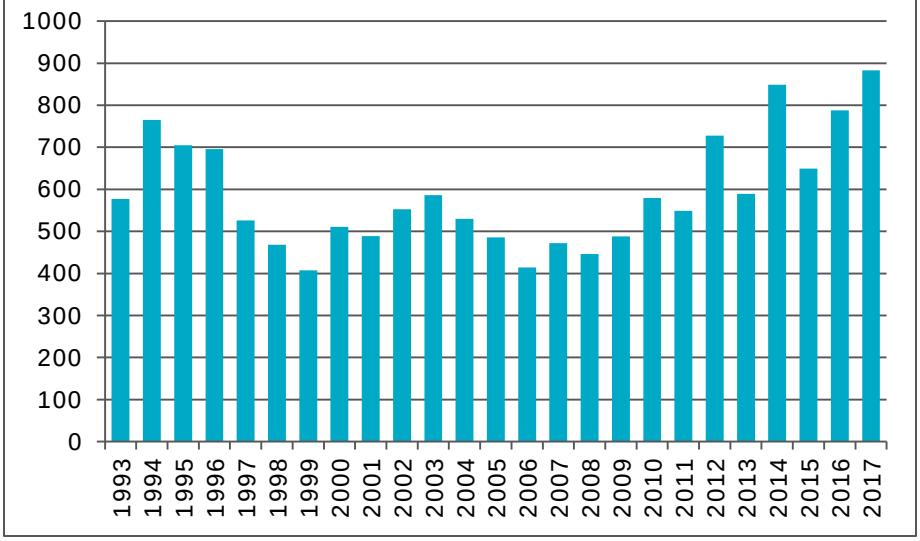
1. The parasite *Entamoeba histolytica* cannot be distinguished by microscopy, which was long the standard diagnostic test, from *Entamoeba dispar*, which is not thought to cause similar disease. In 2016, San Diego County began counting confirmed cases with laboratory evidence of *E. histolytica* (e.g., via EIA, PCR) only. Counts for previous years include cases with laboratory results not distinguishing between *E. histolytica* and *E. dispar*.
2. Amebiasis is no longer nationally notifiable; it was notifiable between 1933 and 1994.

CAMPYLOBACTERIOSIS

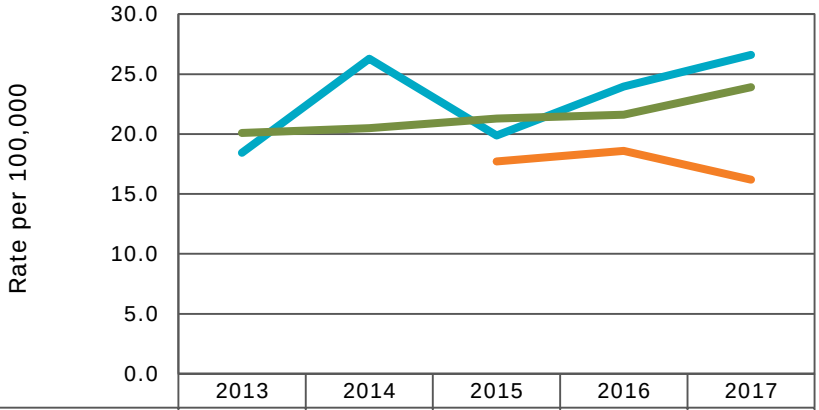
Disease Info

Infectious agent: *Campylobacter* bacteria, most often *C. jejuni*
Incubation: Usually 2-5 days, range 1-10 days
Mode of transmission: Ingestion of raw or undercooked poultry, unpasteurized milk products, or other contaminated food/beverages; contact with an infected animal; rarely person-to-person via fecal-oral route
Symptoms: Diarrhea, sometimes bloody; abdominal cramps; fever; nausea; vomiting; may be asymptomatic

Campylobacteriosis Cases, San Diego County 1993-2017



Campylobacteriosis Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	18.4	26.3	19.9	24.0	26.6
California	20.1	20.5	21.3	21.6	23.9
United States			17.7	18.6	16.2

Key Points

- There were 883 campylobacteriosis cases reported among San Diego County residents in 2017. Counts have been higher in recent years, possibly related to increased use of culture-independent diagnostic testing (CIDT) methods.
- The San Diego County incidence rate increased to 26.9 per 100,000 population in 2017. California incidence was slightly lower at 23.9, while the national incidence rate remained under 20. National data are only available since 2015 when campylobacteriosis became nationally notifiable.
- Campylobacteriosis cases are most common during the summer and fall in San Diego County; cases peaked in June in 2017.
- Although the highest case counts are among adults aged 25-64 years, the rate of infection is highest among young children under 5 years of age (40 per 100,000 population).
- Zip codes with higher incidence of campylobacteriosis can be found in many areas of the county.

For more information:

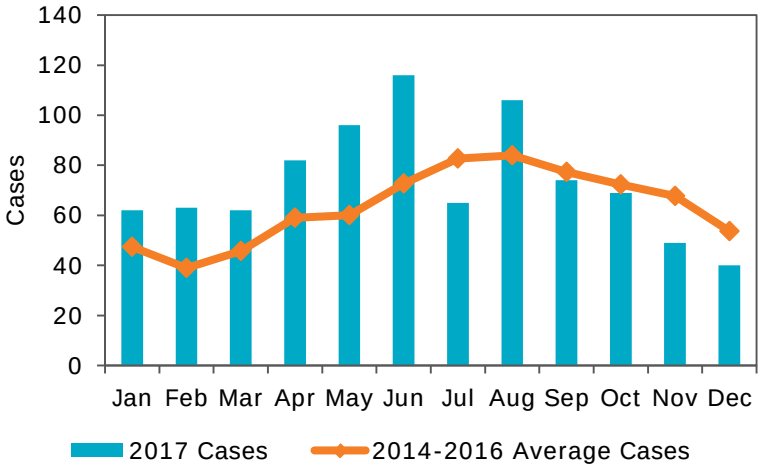
- Centers for Disease Control and Prevention (CDC) *Campylobacter* website
- CDC/CSTE Campylobacteriosis Case Definition
- California Department of Public Health (CDPH) Campylobacteriosis website
- CDPH Food and Drug Branch Food Safety Program website

Notes:

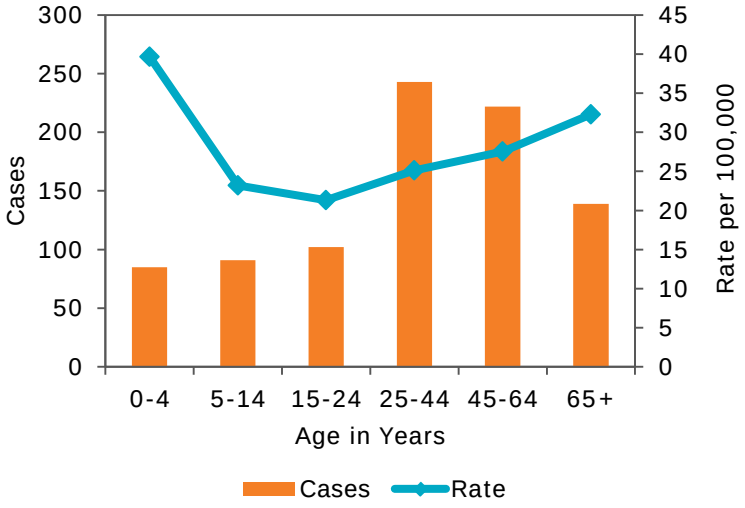
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Campylobacteriosis has been nationally notifiable since 2015.
3. The Epidemiology Program tracks, but does not investigate most campylobacteriosis cases; clinical and epidemiological information is not available for San Diego County cases.

CAMPYLOBACTERIOSIS

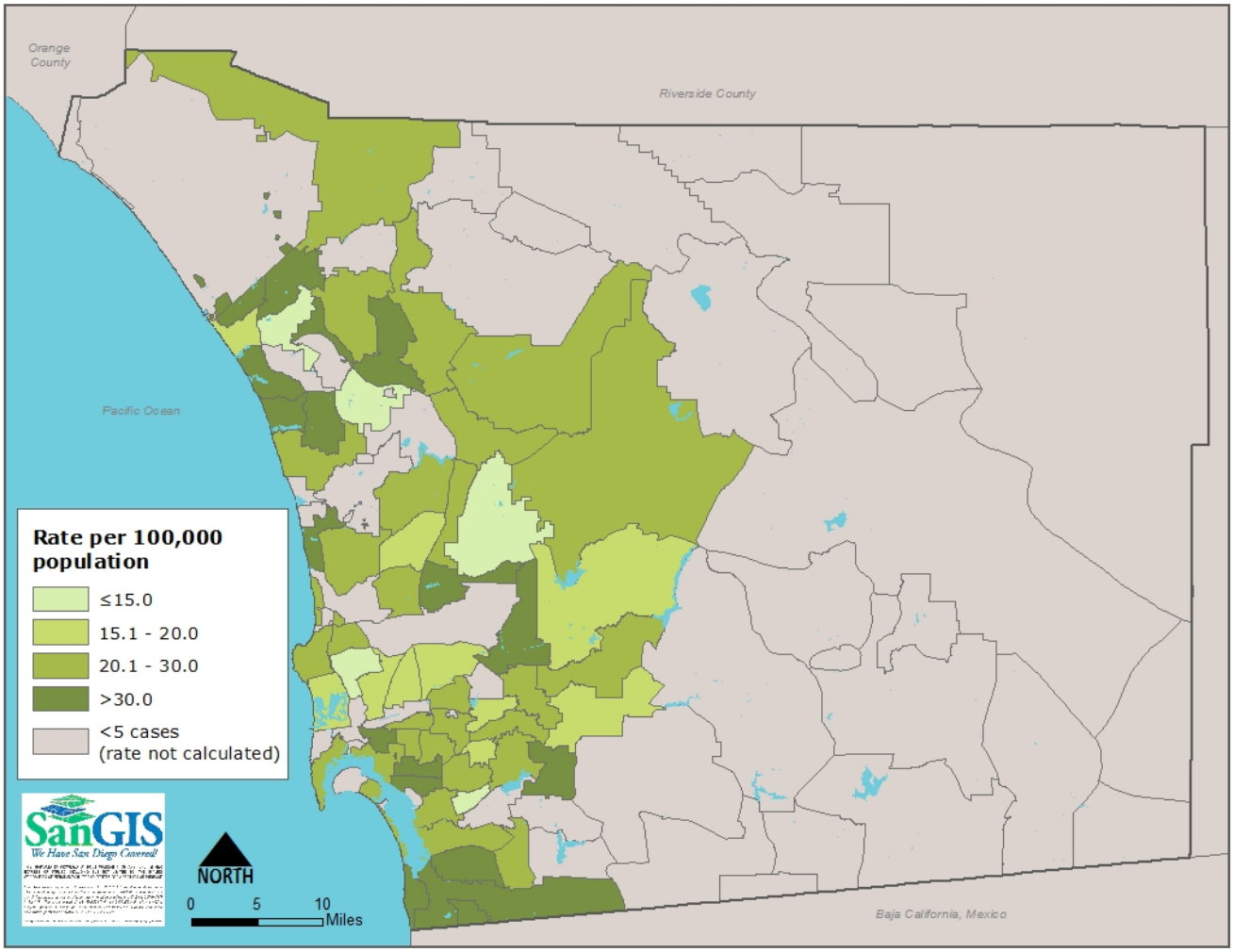
Campylobacteriosis Cases by Month of Onset, San Diego County, 2017



Campylobacteriosis Cases and Rates by Age, San Diego County, 2017



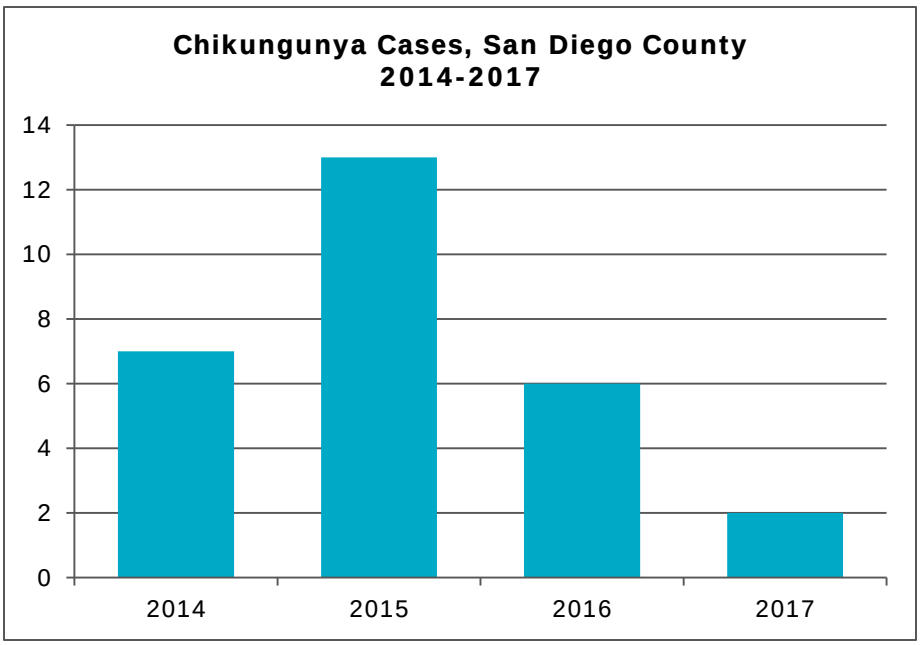
Campylobacteriosis Rates by Zip Code, San Diego County, 2017



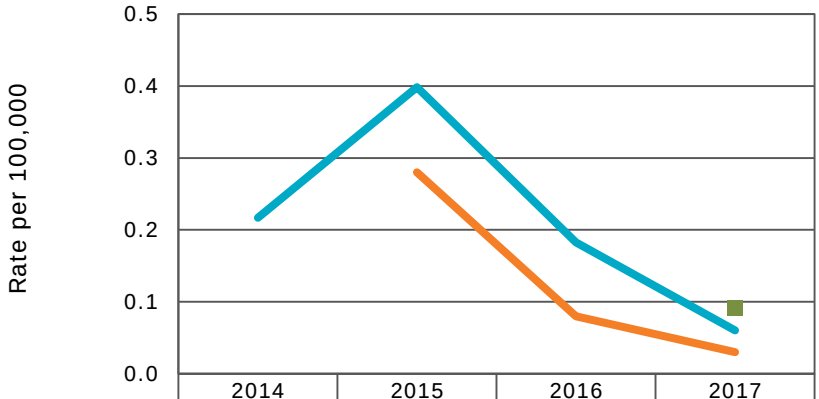
CHIKUNGUNYA VIRUS INFECTION

Disease Info

Infectious agent: Chikungunya virus, an RNA virus of the family *Togaviridae*
Incubation: Usually 3-7 days, range 1-12 days
Mode of transmission: Bite of an infected *Aedes* mosquito, primarily *Aedes aegypti* and *Aedes albopictus*
Symptoms: Most commonly, fever and severe joint pain; also headaches, joint swelling, muscle pain, rash



Chikungunya Incidence, San Diego County, California, and United States, 2014-2017



	2014	2015	2016	2017
San Diego County	0.22	0.40	0.18	0.06
California				0.09
United States		0.28	0.08	0.03

Key Points

- There were two cases of chikungunya virus infection among San Diego County residents in 2017.
- There have been 28 chikungunya cases among San Diego County residents since the Epidemiology and Immunization Services Branch began tracking chikungunya in 2014. The virus was found in the Americas for the first time in late 2013.
- Both San Diego County cases of chikungunya virus infection in 2017 were in 25-44-year-old adults.
- Chikungunya virus is not endemic in San Diego County. Although invasive *Aedes* mosquitoes have been detected in the county, both cases in 2017 were acquired during travel to South America.

For more information:

- Centers for Disease Control and Prevention (CDC) Chikungunya website
- CDC Health Information for International Travel (the Yellow Book) – Chikungunya
- CDC/CSTE Chikungunya Case Definition (Arboviral Diseases)
- California Department of Public Health (CDPH) Chikungunya website
- CDPH Aedes Aegypti and Aedes Albopictus Mosquitos website
- County of San Diego Department of Environmental Health Invasive Aedes Mosquitoes website
- World Health Organization Chikungunya website

Notes:

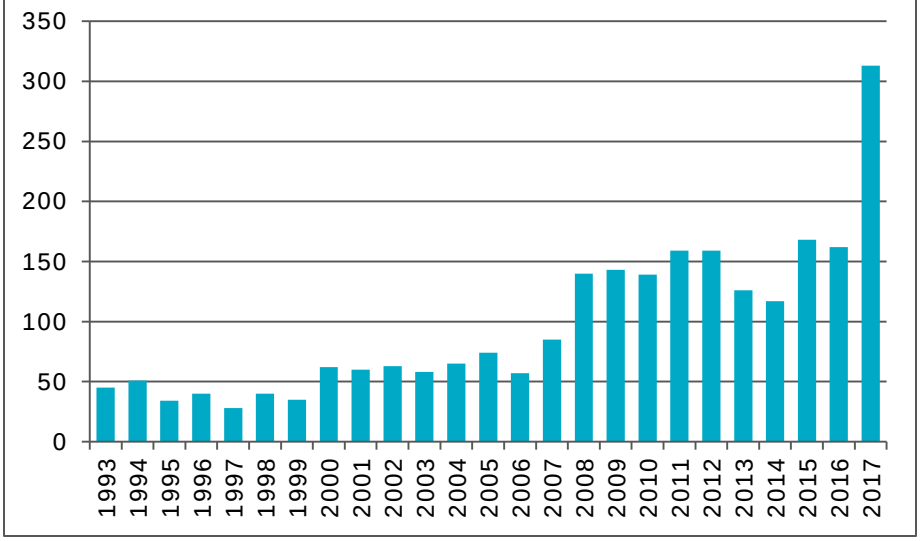
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Chikungunya has been nationally notifiable since 2015. It was added to the list of diseases reportable under the umbrella of arboviral diseases, neuroinvasive and non-neuroinvasive.
3. Required reporting in California began in June 2016; thus, complete data for California are only available for 2017.

COCCIDIOIDOMYCOSIS

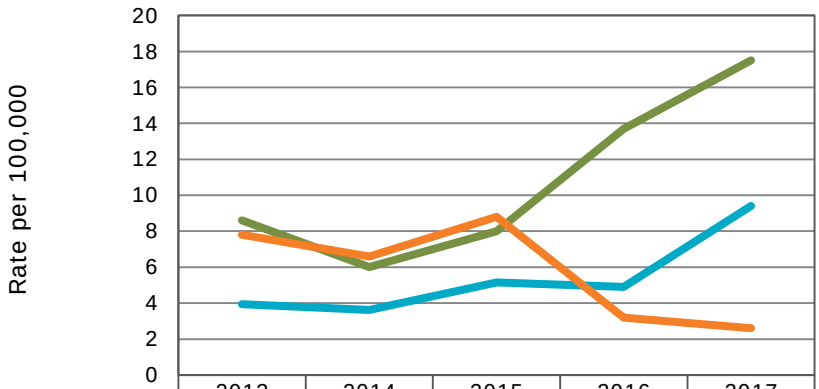
Disease Info

Infectious agent: *Coccidioides immitis* and *Coccidioides posadasii*, fungi
Incubation: Range 1-3 weeks
Mode of transmission: Inhalation of fungal spores from soil or airborne dust
Symptoms: Fatigue, cough, fever, shortness of breath, headache, night sweats, muscle aches or joint pain, rash; in rare instances, disseminated disease involves skin and soft tissues, bones, joints, or central nervous system. Disease can be acute or chronic. Approximately 60% of infections are asymptomatic.

Coccidioidomycosis Cases, San Diego County 1993-2017



Coccidioidomycosis Incidence, San Diego County, California, and United States, 2012-2017



	2013	2014	2015	2016	2017
San Diego County	3.9	3.6	5.1	4.9	9.4
California	8.6	6.0	8.0	13.7	17.5
United States	7.8	6.6	8.8	3.2	2.6

Key Points

- A total of 313 coccidioidomycosis cases were reported among San Diego County residents in 2017. This is nearly double the number of cases reported in 2016. This increase may be attributed to changes in a combination of factors related to the environment, human activity, and diagnostics.
- In 2017, the incidence rate was lower in San Diego County (9.4 per 100,000) compared to California (17.5 per 100,000), but higher than that for the United States (2.6 per 100,000).
- In 2017, the onset of disease for the majority of acute coccidioidomycosis cases occurred during the months of September through December.
- Incidence rates were highest among older age groups. The incidence rate among 45-64 year olds was 15.3 per 100,000 population; the incidence rate among persons ages 65 years and over was 17.7 per 100,000 population.
- Incidence rates of coccidioidomycosis are highest in the southern part of the county.
- In 2017, nine percent of case-patients were reported to be incarcerated.

For more information:

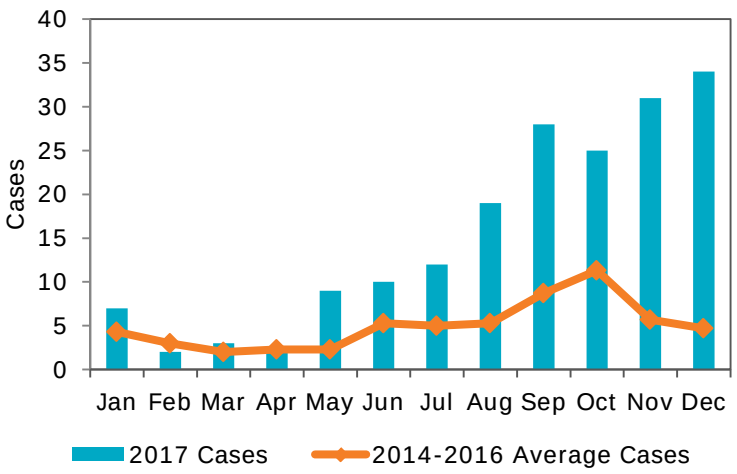
- Centers for Disease Control and Prevention (CDC) Coccidioidomycosis website
- California Department of Public Health (CDPH) Coccidioidomycosis website
- CDC/CSTE Coccidioidomycosis Case Definition

Notes:

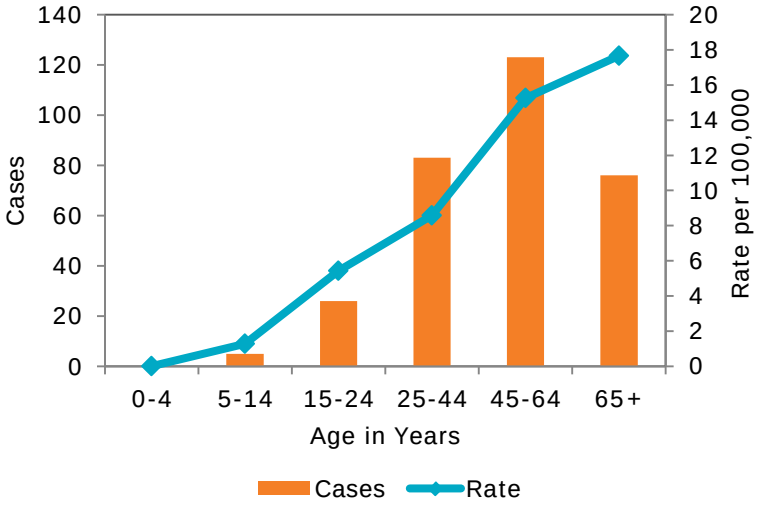
1. Counts include confirmed cases (acute and chronic) following the CDC/CSTE case criteria.
2. Coccidioidomycosis became nationally reportable in 1995.
3. Case criteria were revised in 2008, removing the requirement for a rising titer for coccidioidal immunoglobulin G results.
4. Date of symptom onset is available for acute cases.

COCCIDIOIDOMYCOSIS

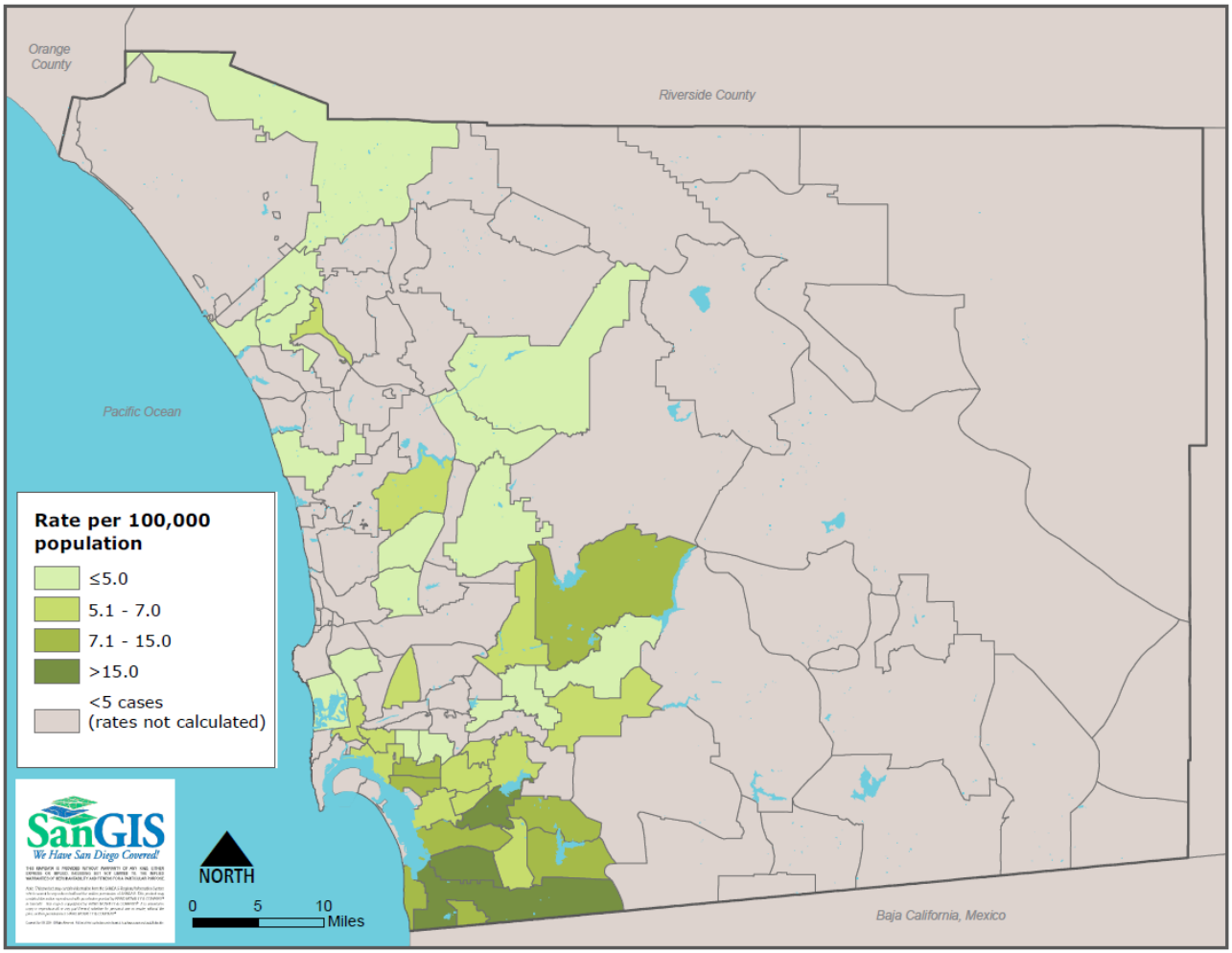
Acute Coccidioidomycosis Cases by Month of Onset, San Diego County, 2017



Coccidioidomycosis Cases and Rates by Age, San Diego County, 2017



Coccidioidomycosis Rates by Zip Code of Residence, San Diego County, 2015-2017



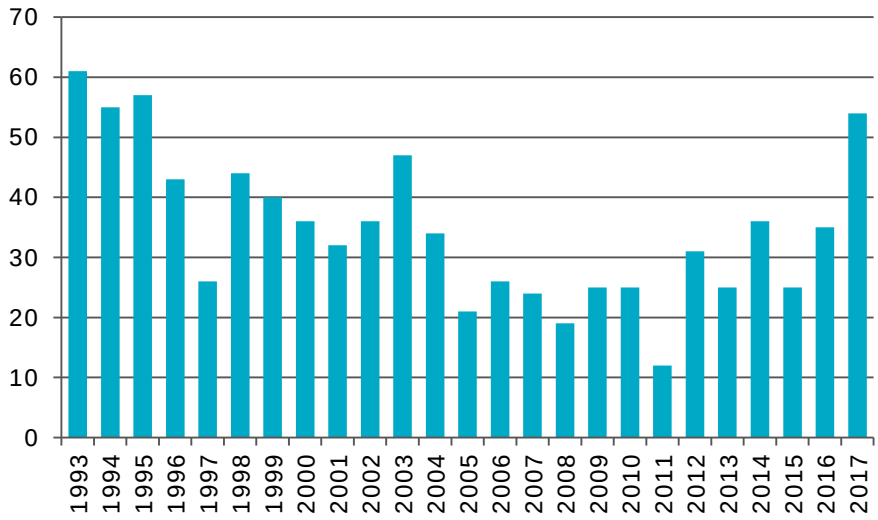
Cases indicating a detention facility as the address of residence are excluded from the calculation of rates by zip code.

CRYPTOSPORIDIOSIS

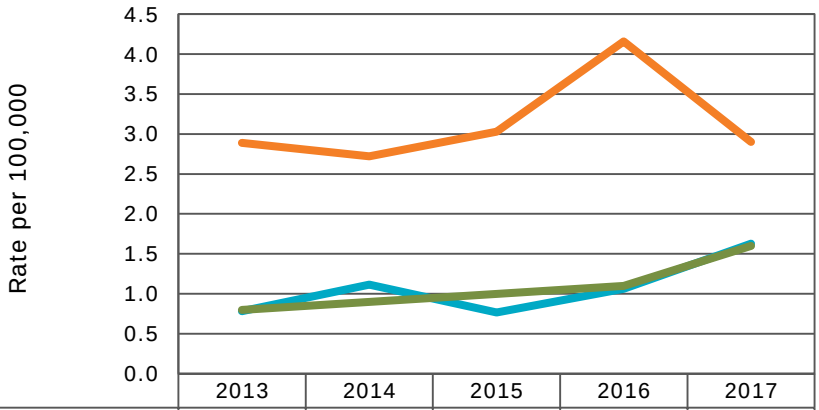
Disease Info

Infectious agent: *Cryptosporidium* parasites, most frequently *C. parvum* or *C. hominis*
Incubation: Usually about 7 days, range 1-12 days
Mode of transmission: Fecal-oral route; person-to-person, food or water contaminated by feces, exposure to recreational water
Symptoms: Watery diarrhea, abdominal cramps, nausea, vomiting, dehydration, fever; people with compromised immune systems may experience more serious illness

Cryptosporidiosis Cases, San Diego County 1993-2017



Cryptosporidiosis Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.8	1.1	0.8	1.1	1.6
California	0.8	0.9	1.0	1.1	1.6
United States	2.9	2.7	3.0	4.2	2.9

Key Points

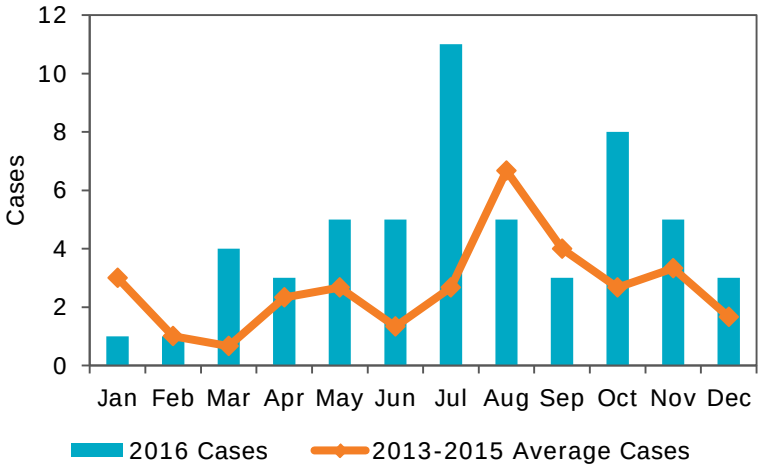
- There were 54 reported cases of cryptosporidiosis among San Diego County residents in 2017, more than double the average of 26 cases per year over the previous 10 years.
- The national incidence rate of cryptosporidiosis dropped back under 3.0 per 100,000 population in 2017 after an increase in 2016. National incidence rates remain consistently higher than incidence rates in California and San Diego County, which increased to 1.6 per 100,000 in 2017.
- San Diego County cases peaked during July 2017, with a secondary peak in October, compared to a peak in August over the previous three years.
- Although the highest cryptosporidiosis case count in 2017 was among 25-44 year olds, the rate was highest among children under the age of five (2.8 per 100,000).
- Most San Diego County residents infected with cryptosporidiosis in 2017 had diarrhea (95%). Other common symptoms, reported by more than 60% of case-patients, were abdominal pain and nausea.
- Thirty-five percent of cases were immune compromised and over 30% were hospitalized. Those who were immune compromised were more likely to be hospitalized—67% compared to 14% of the immunocompetent.

For more information:

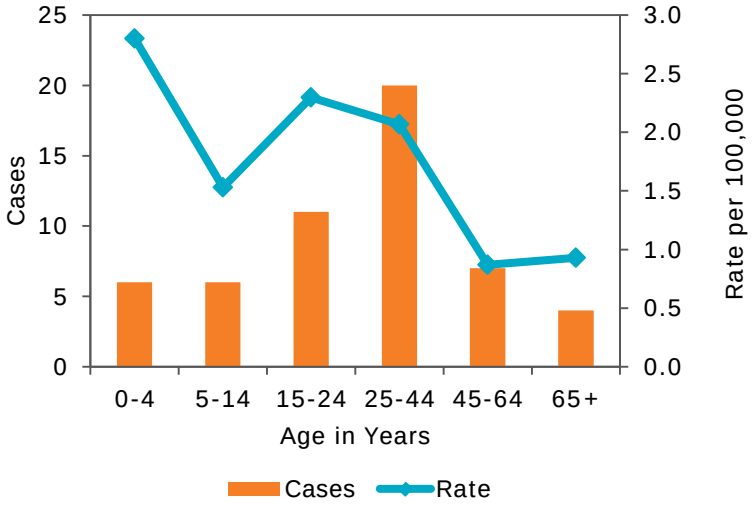
- Centers for Disease Control and Prevention (CDC) Cryptosporidiosis website
- CDC Healthy Water website
- CDC Health Information for International Travel (the Yellow Book) – Cryptosporidiosis
- CDC/CSTE Cryptosporidiosis Case Definition
- California Department of Public Health (CDPH) Cryptosporidiosis website

CRYPTOSPORIDIOSIS

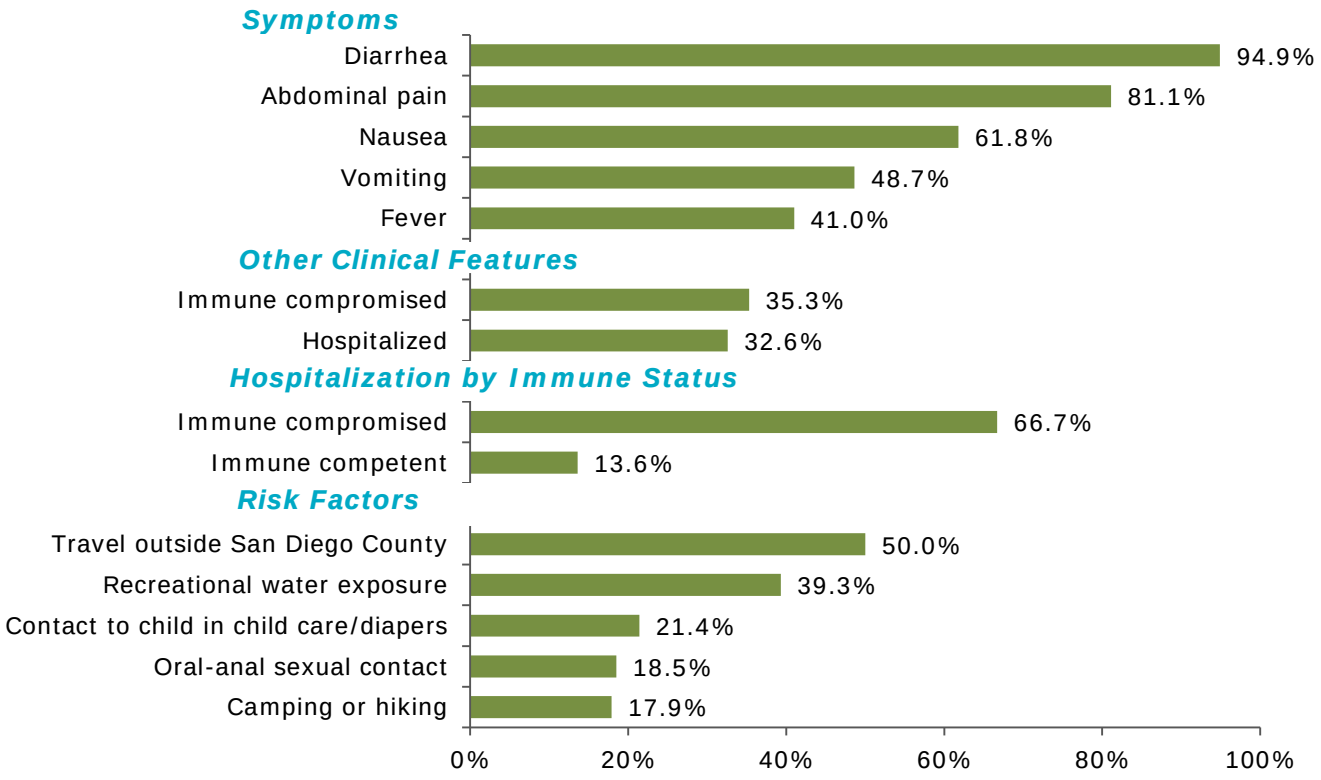
Cryptosporidiosis Cases by Month of Onset, San Diego County, 2017



Cryptosporidiosis Cases and Rates by Age, San Diego County, 2017



Clinical and Risk Characteristics Reported by Cryptosporidiosis Cases, San Diego County, 2017



Notes:

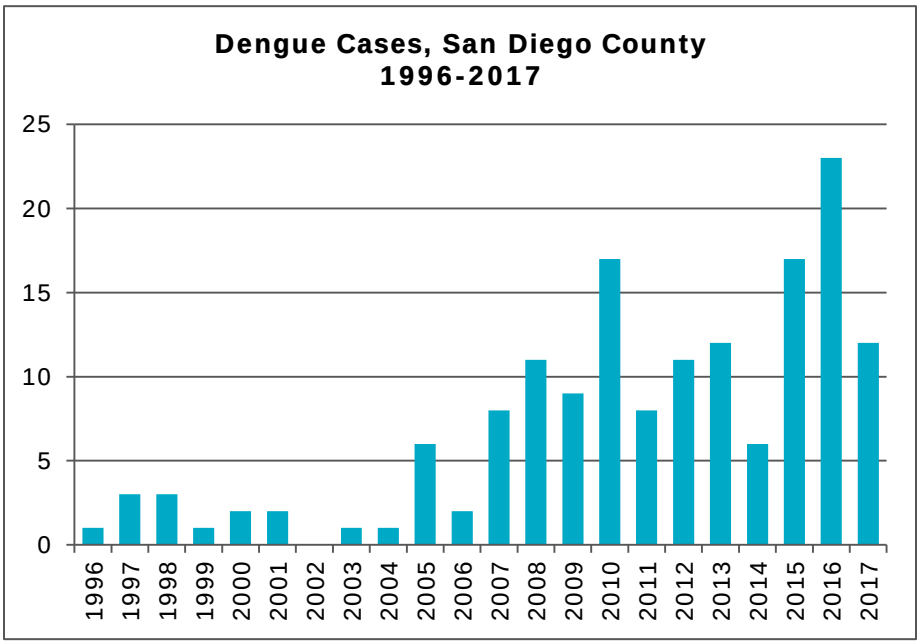
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Cryptosporidiosis has been nationally notifiable since 1995.
3. Denominators for clinical and risk characteristics calculations are cases with available information, ranging from 27-43 of 54 total cases. Thirty-four cases had complete information for both hospitalization and immune status; different denominators are used for calculation of these percentages. Risk factors are potential exposures mentioned by case-patients, not confirmed sources of infection.

DENGUE VIRUS INFECTION

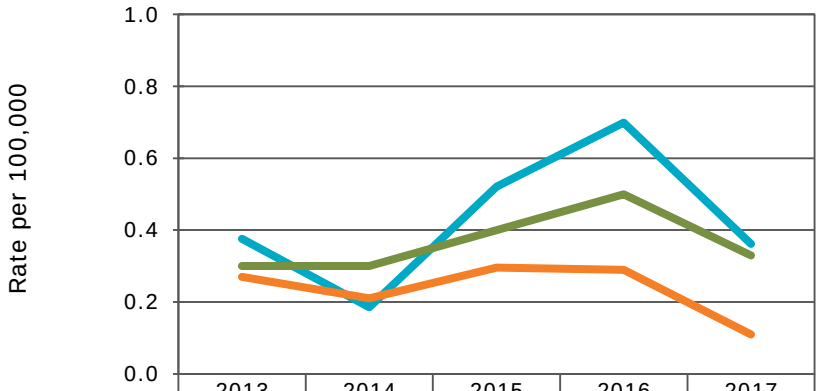
Disease Info

Infectious agent: Four closely related dengue virus serotypes (DENV1-4), flaviviruses
Incubation: Usually 4-7 days, range 3-14 days
Mode of transmission: Bite of an infected *Aedes* mosquito, primarily *Aedes aegypti* and *Aedes albopictus*
Symptoms: Fever, headaches, eye pain, joint pain, muscle pain, rash, minor bleeding, nausea and vomiting; the more severe, hemorrhagic form of disease may result in shock, fluid accumulation, and respiratory distress

Dengue Cases, San Diego County 1996-2017



Dengue Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.4	0.2	0.5	0.7	0.4
California	0.3	0.3	0.4	0.5	0.3
United States	0.3	0.2	0.3	0.3	0.1

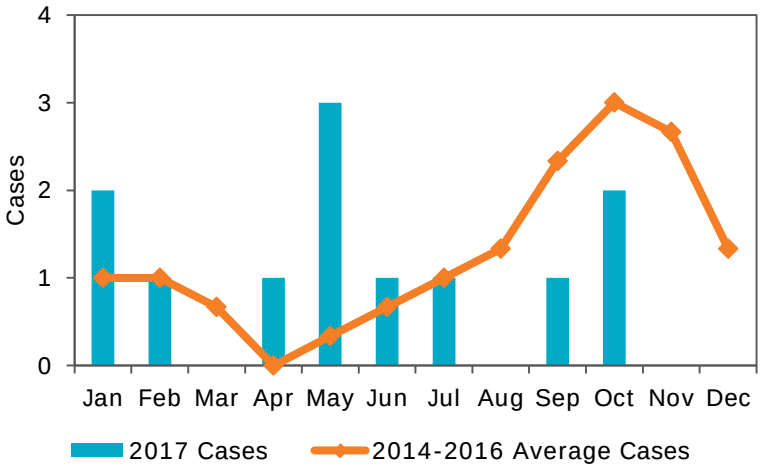
Key Points

- There were 12 cases of dengue virus infection among San Diego County residents in 2017, about half the number of cases in 2016, and close to the average of 13.8 cases per year over the previous 5 years.
- After increasing to 0.7 cases per 100,000 population in 2016, the incidence rate of dengue among San Diego County residents dropped to 0.4 per 100,000 in 2017. Trends were similar, though less pronounced, in California and the United States, where incidence rates remained lower than in San Diego County.
- Dengue is not endemic in San Diego County. Although invasive *Aedes* mosquitos have been detected in the county, all 12 cases in 2017 were acquired during travel to Asia and the Pacific and Mexico.
- In contrast to recent years, when more San Diego County cases were reported in the late summer and early fall, there was no seasonal trend in 2017.
- In 2017, dengue case-patients ranged in age from five to 77 years. The highest number and highest rate were among those aged 25-44 years.
- The most common symptom was fever, reported by two-thirds of San Diego County case-patients.

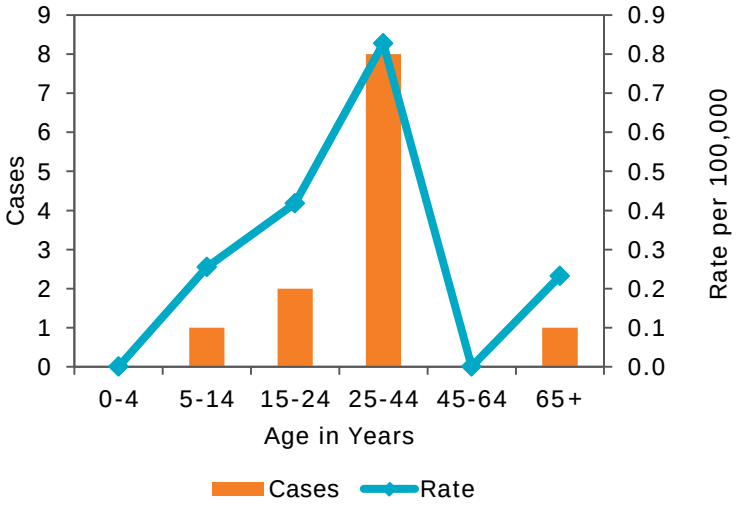
Female *Aedes aegypti* mosquito
Photo credit: CDC/James Gatheny, Public Health Image Library

DENGUE VIRUS INFECTION

Dengue Cases by Month of Onset, San Diego County, 2017



Dengue Cases and Rates by Age, San Diego County, 2017



Select Characteristics of Dengue Cases, San Diego County, 2017

Characteristic	Cases	Percent
Symptoms		
Fever (and/or sweats/chills)	8	66.7
Headache	5	41.7
Rash	4	33.3
Joint pain	4	33.3
Muscle pain	4	33.3
Diarrhea	3	25.0
Eye pain	2	16.7
Abdominal pain	2	16.7
Nausea or vomiting	2	16.7
Hospitalized	0	0.0
Travel location		
Asia/Pacific	10	83.3
Mexico	2	16.7

Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Dengue has been nationally notifiable since 2010.
3. An outbreak of Zika virus, another flavivirus, in the Americas beginning in 2015 may have resulted in increased testing for and detections of dengue virus as well as Zika virus, due to their similar clinical presentations and transmission by the same mosquitos.
4. Clinical and travel information was available for all 12 cases; 12 is the denominator for these calculations.
5. Information on dengue serotype was not available for most cases.

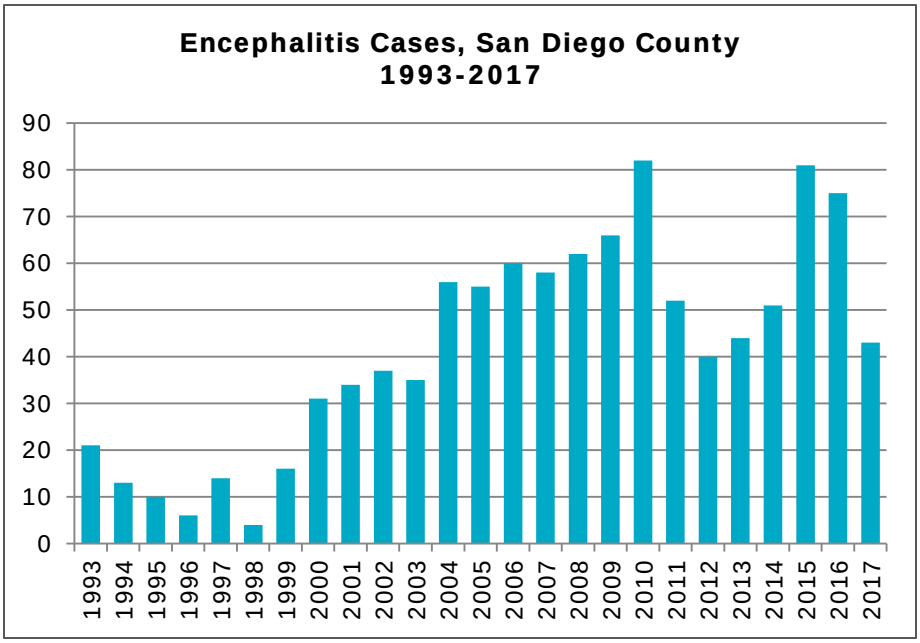
For more information:

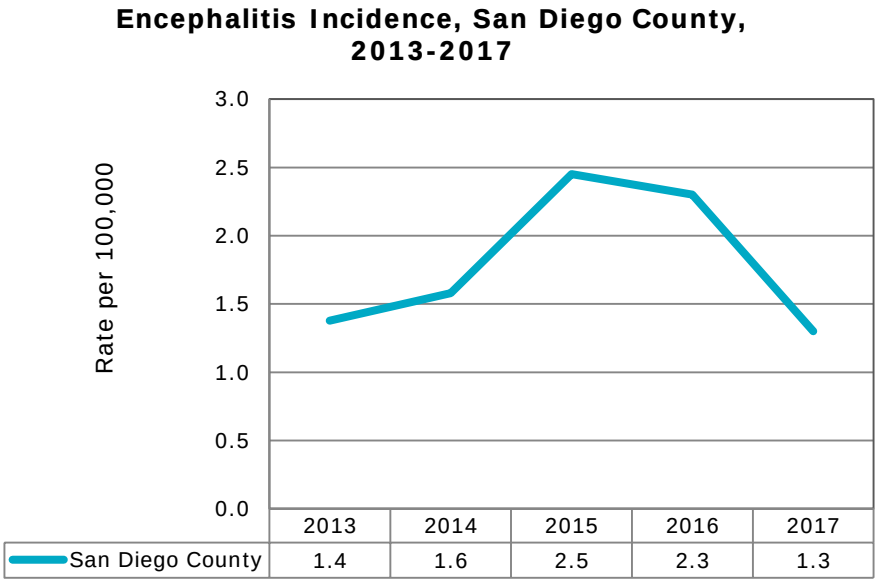
- Centers for Disease Control and Prevention (CDC) Dengue website
- CDC Health Information for International Travel (the Yellow Book) – Dengue
- CDC/CSTE Dengue Case Definition
- California Department of Public Health (CDPH) Dengue website
- CDPH Aedes Aegypti and Aedes Albopictus Mosquitos website
- County of San Diego Department of Environmental Health Invasive Aedes Mosquitoes website
- World Health Organization Dengue website

ENCEPHALITIS

Disease Info

Infectious agent: Causes of encephalitis include viruses, bacteria, fungus, and parasites; the etiology is often not identified
Incubation: Depends on the agent
Mode of transmission: Depends on the agent
Symptoms: Sudden onset of fever, headache, vomiting, sensitivity to light, stiff neck and back; more severe cases can develop problems with speech or hearing, vision problems, and hallucinations; can progress to loss of consciousness, seizures, muscle weakness, or sudden severe dementia

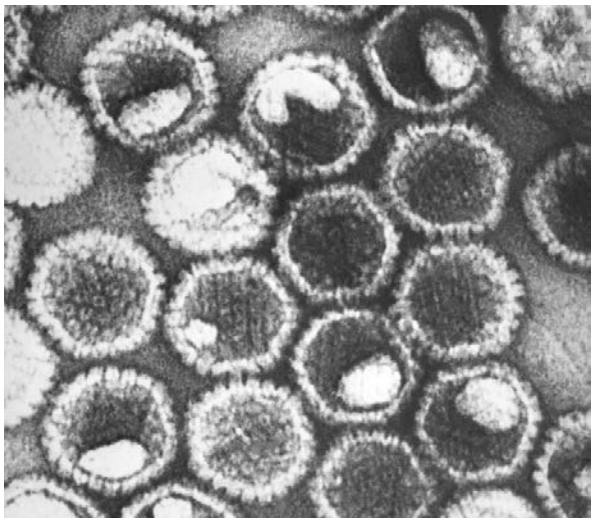




US and CA incidence data are not available. Encephalitis is not nationally reportable.

Key Points

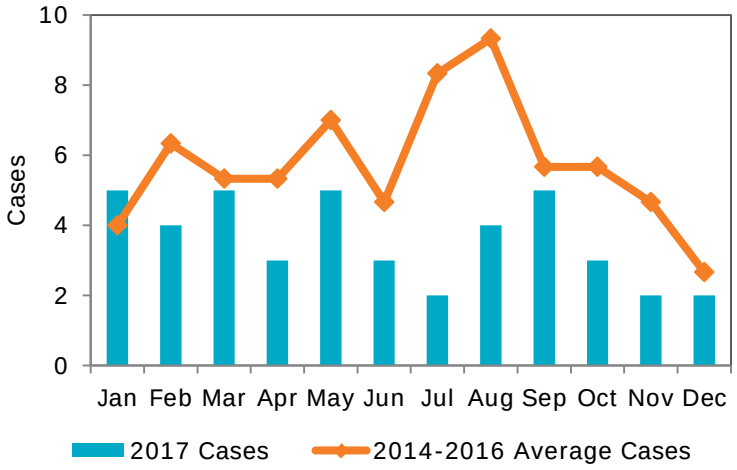
- In 2017, 43 cases of encephalitis were reported among residents of San Diego County. This is a decrease of 43% compared to the previous year (75 cases).
- In 2017, the incidence rate of encephalitis in San Diego County was 1.3 per 100,000 population.
- In 2017, a seasonal trend for encephalitis cases was not observed. Case counts ranged from two to five cases per month.
- The majority of case-patients (67%) in 2017 were aged 45 years and older. Incidence rates were highest among those aged 65 years and older (3.5 per 100,000).
- Over half of the cases in 2017 (56%) did not have a causative agent identified. Viral infections accounted for 19% of cases, four of which had herpes simplex virus identified as the causative agent.



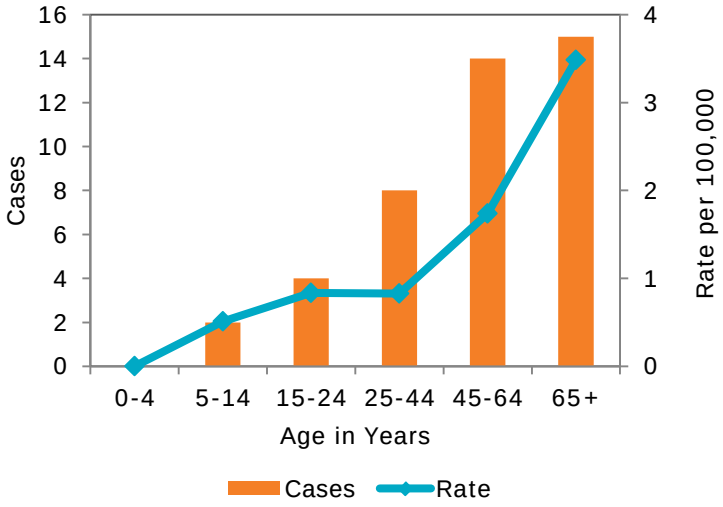
Negative-stained transmission electron microscopic (TEM) image of numerous herpes simplex virons, members of the Herpesviridae virus family.
Photo credit: CDC/ Dr. Fred Murphy; Sylvia Whitfield, Public Health Image Library

ENCEPHALITIS

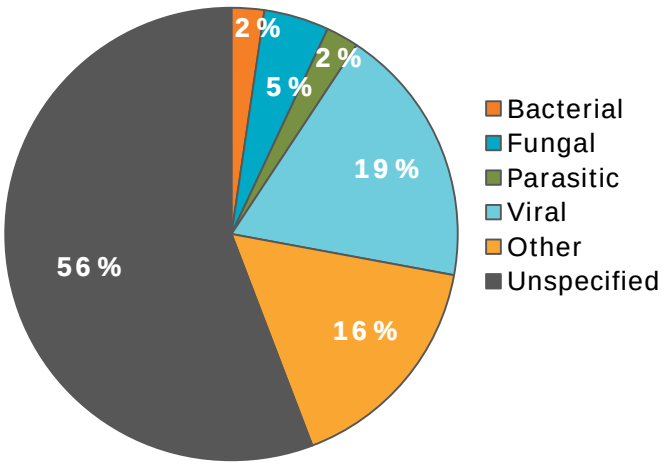
Encephalitis Cases by Month of Onset, San Diego County, 2017



Encephalitis Cases and Rates by Age, San Diego County, 2017



Encephalitis Cases by Etiology, San Diego County, 2017



Notes:

1. Counts include confirmed cases of encephalitis of specific arboviral etiology following the CDC/CSTE case criteria and confirmed cases of aseptic/viral, bacterial, fungal, parasitic, non-infectious/other, and unknown etiologies following local case criteria.
2. Data presented for encephalitis do not include cases of encephalitis due to other infectious reportable disease conditions. For example, these data do not include cases of West Nile virus. Information on West Nile virus is provided in a separate section of this report.
3. Non-infectious/other etiologies include cancer, lupus, certain drugs, head injury, brain surgery, leaking shunt, postinfectious or postimmunization encephalitis or encephalomyelitis including acute disseminated encephalomyelitis, and anti-N-methyl-D-aspartate receptor.
4. Encephalitis, of all types, was removed from the list of nationally notifiable diseases and conditions in 1995, though encephalitis caused by arboviruses remains notifiable.

For more information:

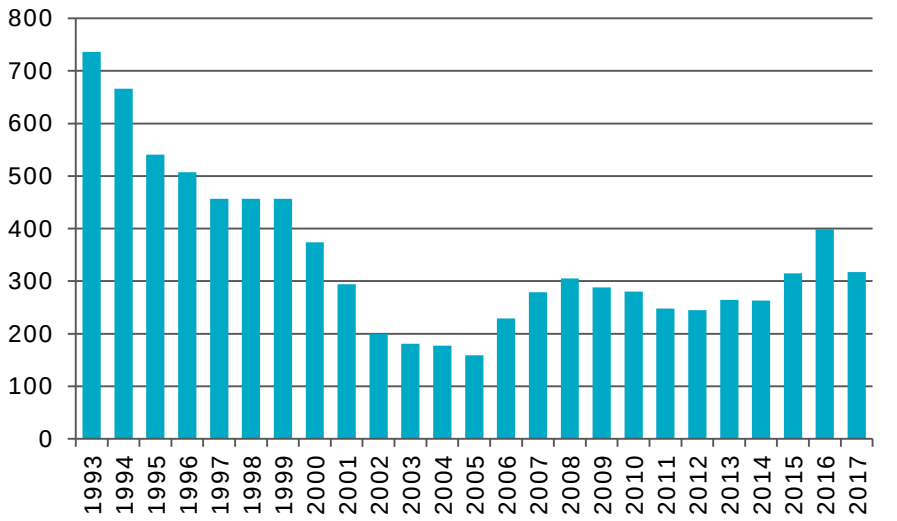
- Centers for Disease Control and Prevention (CDC) Tick-borne Encephalitis website
- CDC Eastern Equine Encephalitis website
- CDC Japanese Encephalitis website
- CDC La Crosse Encephalitis website
- CDC Saint Louis Encephalitis website
- California Department of Public Health (CDPH) Saint Louis Encephalitis website
- CDC/CSTE Encephalitis Case Definition
- National Institute of Neurological Disorders and Stroke Meningitis and Encephalitis Information Page

GIARDIASIS

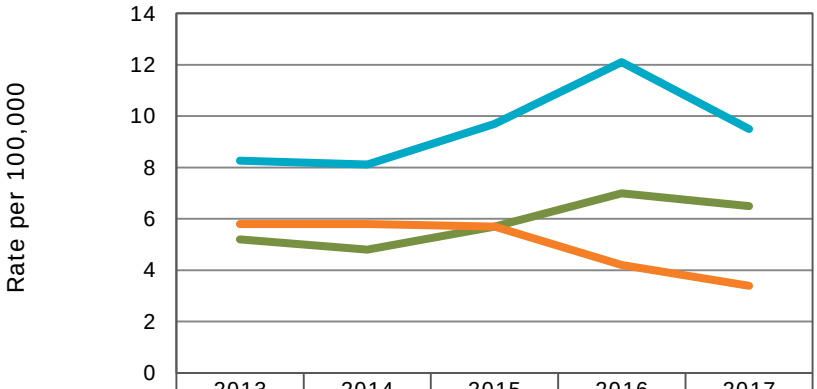
Disease Info

Infectious agent: *Giardia,* also known as *Giardia intestinalis, Giardia lamblia*, and *Giardia duodenalis*, a parasite
Incubation: Usually 3-25 days
Mode of transmission: Fecal-oral; ingestion of contaminated food or water, including untreated drinking water or recreational water sources; person-to-person (e.g., day care/diapers, sexual activity)
Symptoms: Diarrhea, abdominal cramps, nausea, gas, fatigue, weight loss, dehydration; can be asymptomatic

Giardiasis Cases, San Diego County 1993-2017



Giardiasis Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	8.3	8.1	9.7	12.1	9.5
California	5.2	4.8	5.7	7.0	6.5
United States	5.8	5.8	5.7	4.2	3.4

Key Points

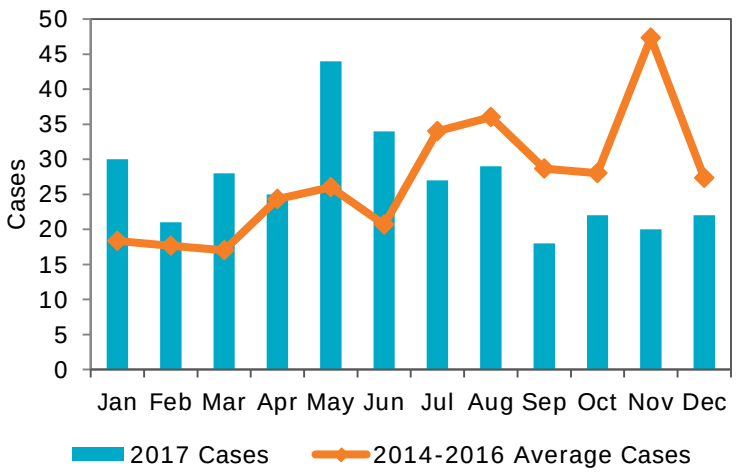
- In 2017, there were 317 cases of giardiasis in San Diego County. This is a decrease of 21% compared to the previous year (399 cases).
- The incidence rate of giardiasis in 2017 was higher in San Diego County (9.5 per 100,000) than in California (6.5 per 100,000) and the United States (3.4 per 100,000).
- In recent years, there has been no consistent seasonal pattern in giardiasis cases in San Diego County.
- In San Diego County, while case counts were highest among 25-64 year olds, rates were highest among children aged four years and younger.
- A County-sponsored refugee health screening program began reporting cases of giardiasis in mid-2006. In 2017, 22% of cases reported in San Diego County were among refugees.
- Other risk factors reported by case-patients included eating out (79%), eating fresh fruits (85%) and raw vegetables (75%), exposure to animals (59%), and travel (52%). Another group at risk are men who have sex with men (19%).
- Rates of giardiasis were highest among residents of the Central, East, and North Coastal HHSA Regions of San Diego County.

Notes:

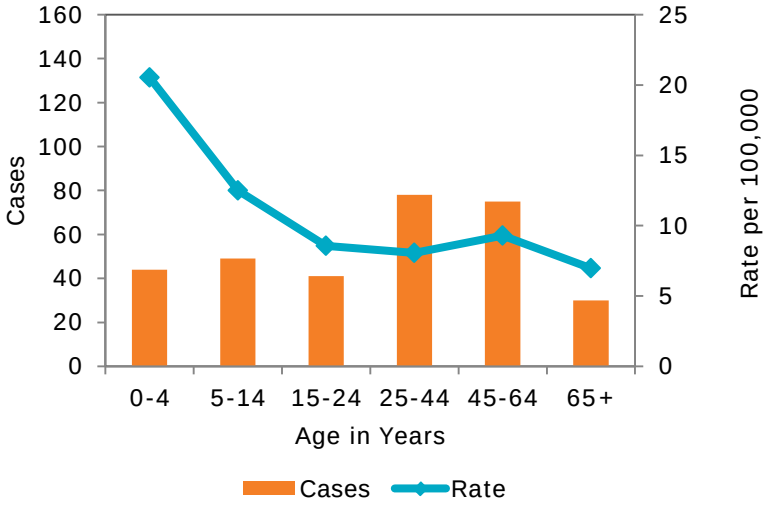
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Giardiasis became nationally notifiable in 2002.
3. Denominators for risk factor calculations are cases with available information, ranging from 140-317 of 317 total cases.

GIARDIASIS

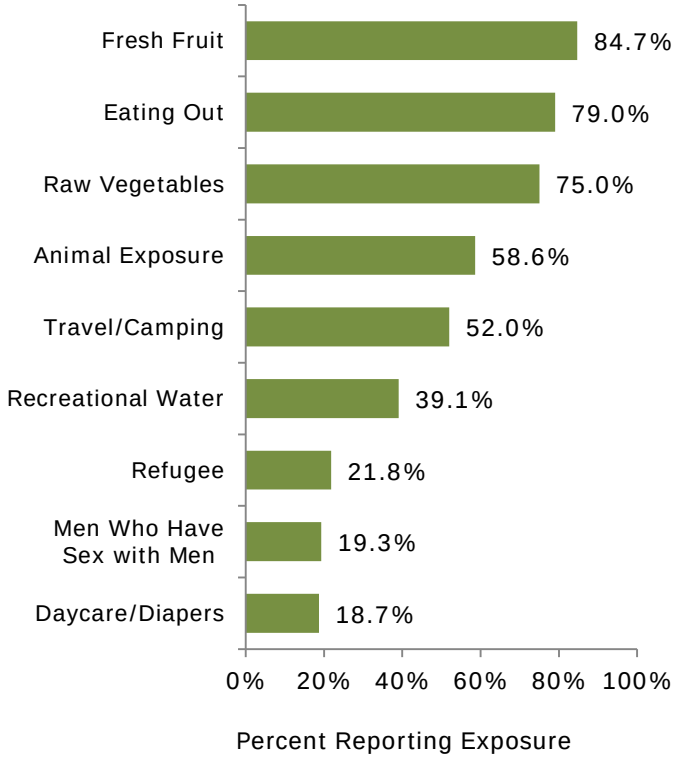
Giardiasis Cases by Month of Onset, San Diego County, 2017

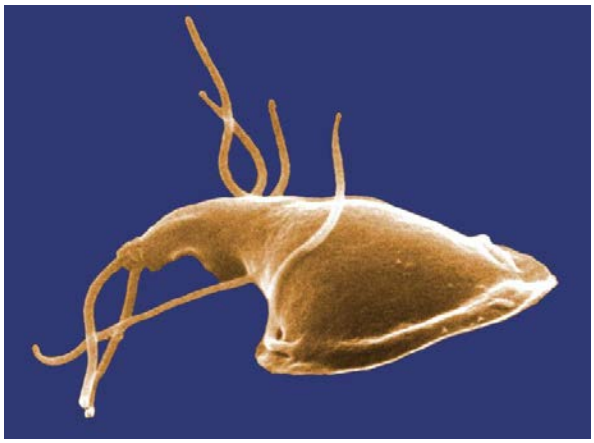


Giardiasis Cases and Rates by Age, San Diego County, 2017



Risk Factors Reported by Giardiasis Case-Patients, San Diego County, 2017





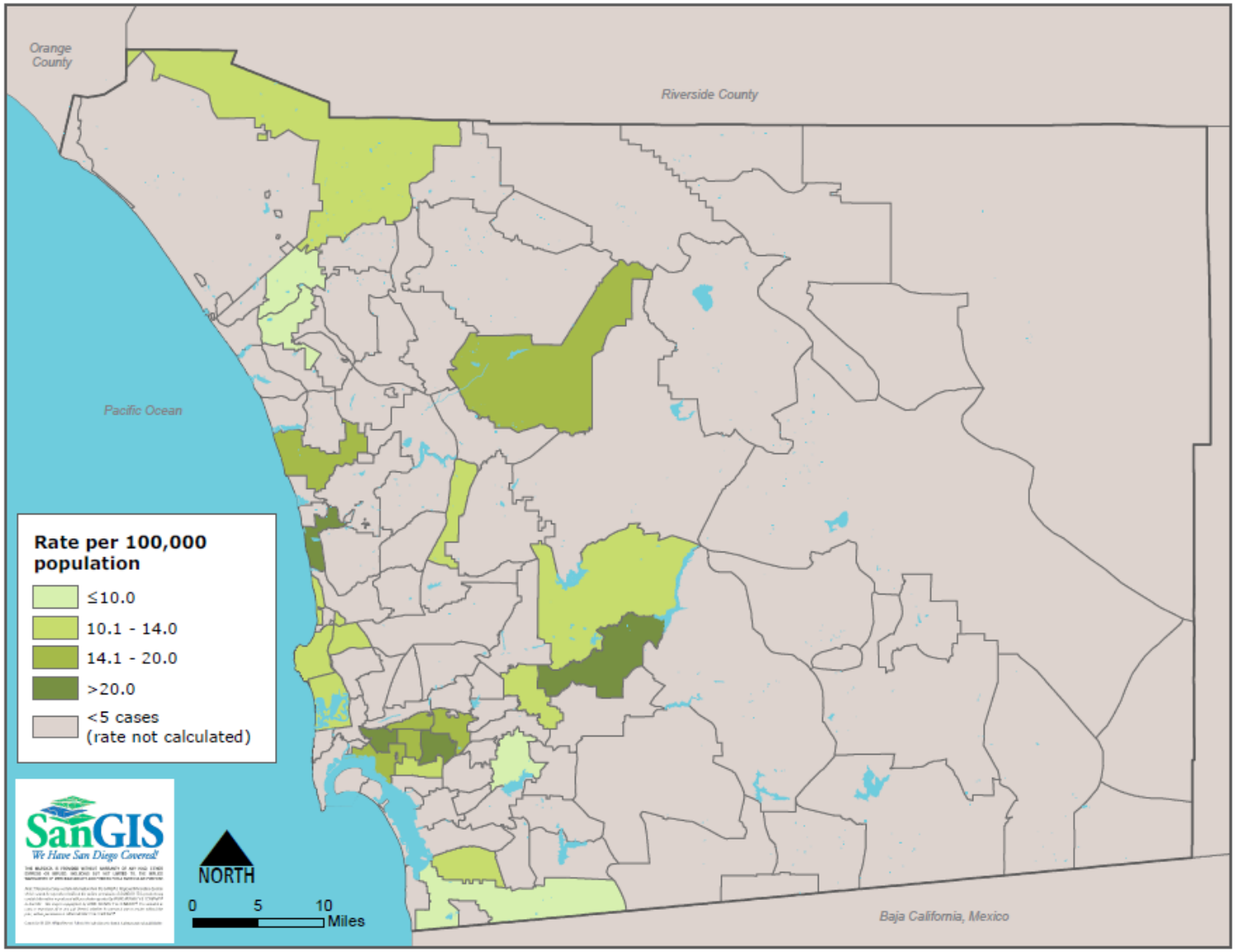
Scanning electron microscopic (SEM) image depicting the dorsal (upper) surface of a *Giardia* protozoan.
Photo credit: Dr. Stan Erlandsen, Dr. Dennis Feely, Public Health Image Library

For more information:

- Centers for Disease Control and Prevention (CDC) *Giardia* website
- CDC Health Information for International Travel (the Yellow Book) – Giardiasis
- California Department of Public Health (CDPH) Giardiasis website
- CDC/CSTE Giardiasis Case Definition

GIARDIASIS

Giardiasis Rates by Zip Code of Residence, San Diego County, 2017

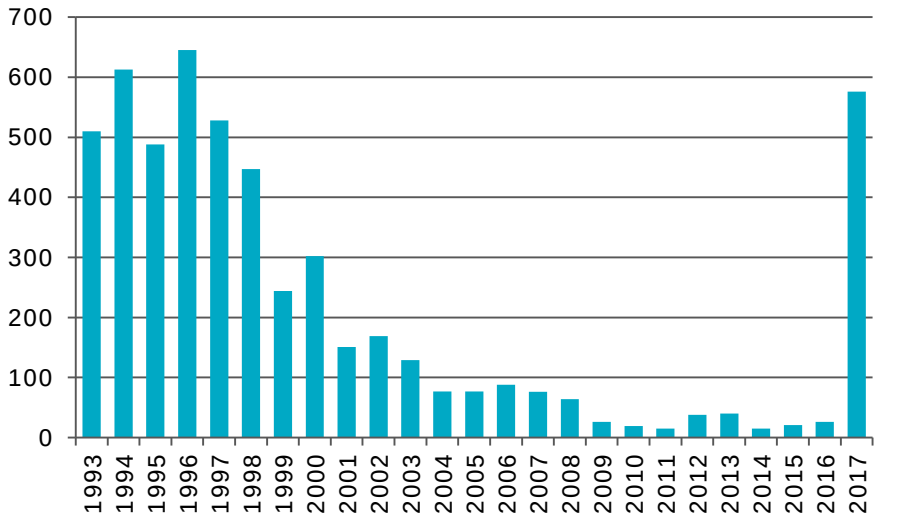


HEPATITIS A

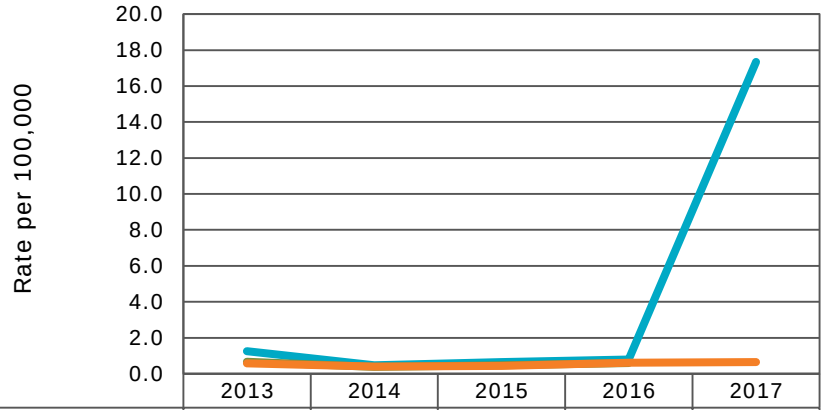
Disease Info

Infectious agent: Hepatitis A virus, a picornavirus
Incubation: Usually 28-30 days, range 15-50 days
Mode of transmission: Person-to-person via the fecal-oral route; food or water contaminated by feces
Symptoms: Jaundice, fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark urine, clay-colored stool; may be asymptomatic, particularly in young children

Hepatitis A Cases, San Diego County 1993-2017



Hepatitis A Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	1.3	0.5	0.6	0.8	17.3
California	0.7	0.4	0.5	0.6	*
United States	0.6	0.4	0.4	0.6	0.6

*California data for 2017 were not available at publication.

Key Points

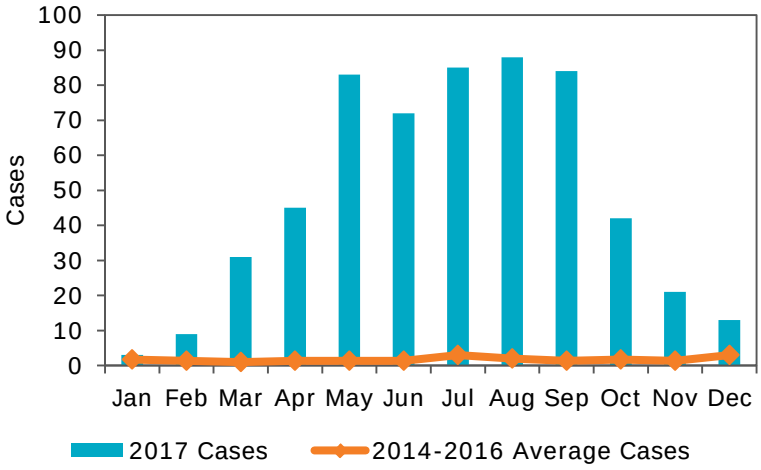
- There were 576 cases of hepatitis A among San Diego County residents in 2017. The majority of these cases were associated with a large local outbreak. See the box on the last page of this section for additional information.
- Prior to 2017, counts had been low following the introduction of the vaccine in 1995 and adoption of a policy of routine vaccination of children in California in 1999.
- San Diego County incidence, which has typically been higher than California and United States incidence, increased from 0.8 per 100,000 population in 2016 to 17.5 per 100,000 in 2017.
- Case counts peaked between May and September in 2017.
- Since children are routinely vaccinated against hepatitis A, most cases are now in adults; in 2017, the highest counts and rates were among adults aged 25-64 years.
- Symptoms reported by at least two-thirds of San Diego County case-patients in 2017 included jaundice, abdominal pain, dark urine, loss of appetite, and fatigue.
- The outbreak most affected persons experiencing homelessness and persons using illicit drugs; 64% of all 2017 cases were either homeless or illicit drug users (including many who were both).

For more information:

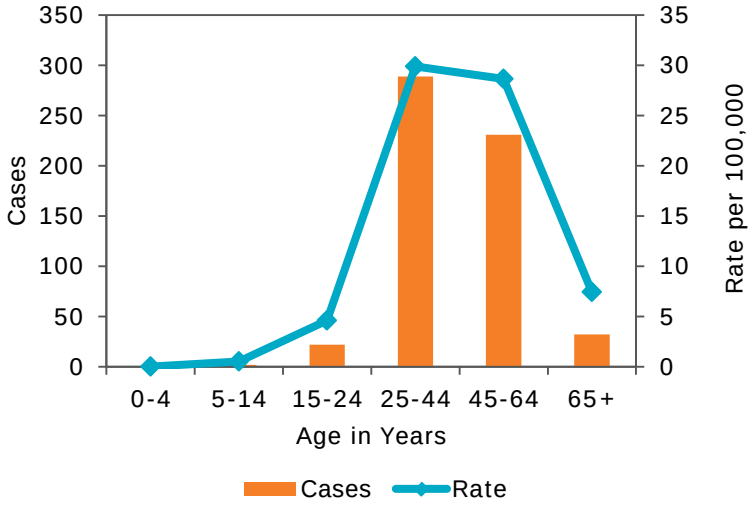
- Centers for Disease Control and Prevention (CDC) Hepatitis A website
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book) – Hepatitis A
- CDC Health Information for International Travel (the Yellow Book) – Hepatitis A
- CDC/CSTE Hepatitis A Case Definition
- California Department of Public Health (CDPH) Hepatitis A website
- County of San Diego Hepatitis A website

HEPATITIS A

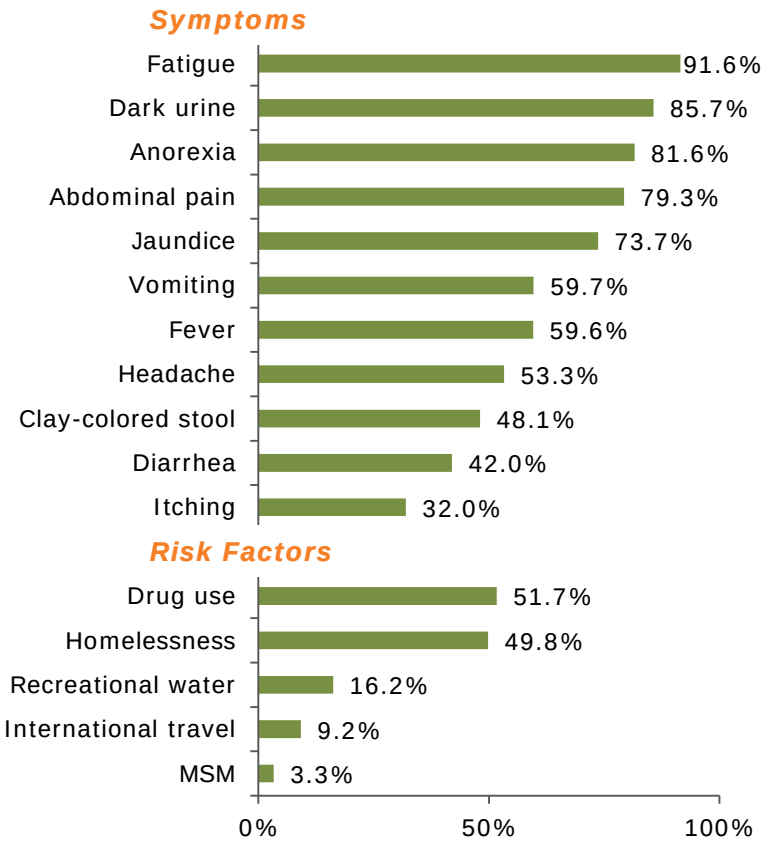
Hepatitis A Cases by Month of Onset, San Diego County, 2017



Hepatitis A Cases and Rates by Age, San Diego County, 2017



Select Characteristics Reported by Hepatitis A Case-Patients, San Diego County, 2017



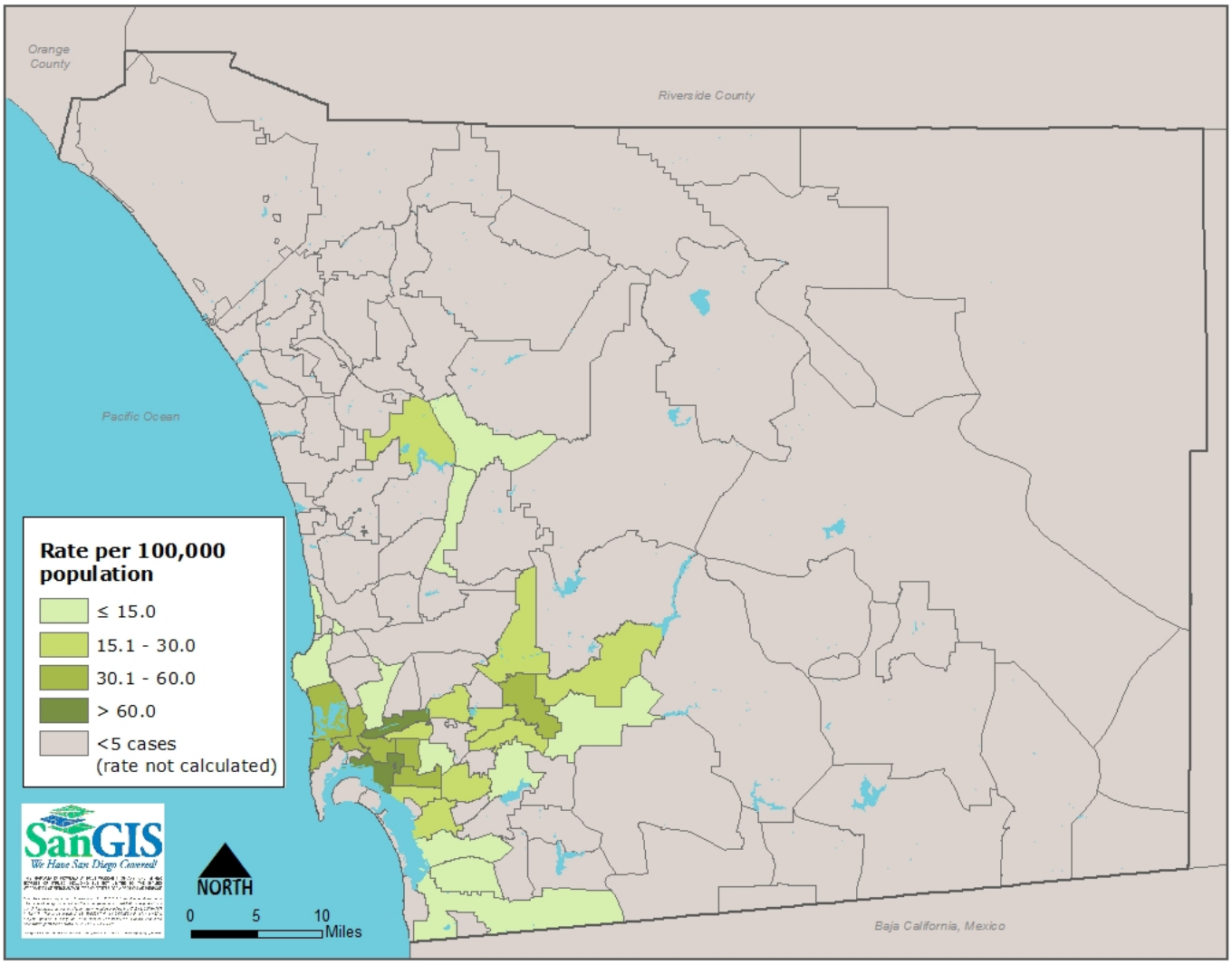
70% HOSPITALIZED 2017

Notes:

1. Counts include confirmed cases following the CDC/CSTE case criteria. A large outbreak of hepatitis A began in late 2016. Outbreak case criteria differed from CSTE criteria. Both outbreak and non-outbreak cases that meet CSTE criteria are included in this summary. See the box on the next page for additional information about the outbreak.
2. Hepatitis A has been nationally notifiable since 1966.
3. Hepatitis A is vaccine-preventable. The vaccine became available in the United States in 1995, was recommended as a routine vaccination for children in high-incidence states (including California) starting in 1999, and was recommended as a routine vaccination for all children beginning in 2006.
4. Denominators for symptom and risk factor calculations are cases with available information, ranging from 370 to 576 of 576 total cases. MSM refers to men who had sex with men during their exposure period, not to identity.
5. Risk factors are potential sources as reported by case-patients, not confirmed sources of infection. Categories are not mutually exclusive. Recreational water refers to participation in aquatic activities such as surfing or swimming in the ocean, water parks, etc.

HEPATITIS A

Hepatitis A Rates by Zip Code of Residence, San Diego County, 2017



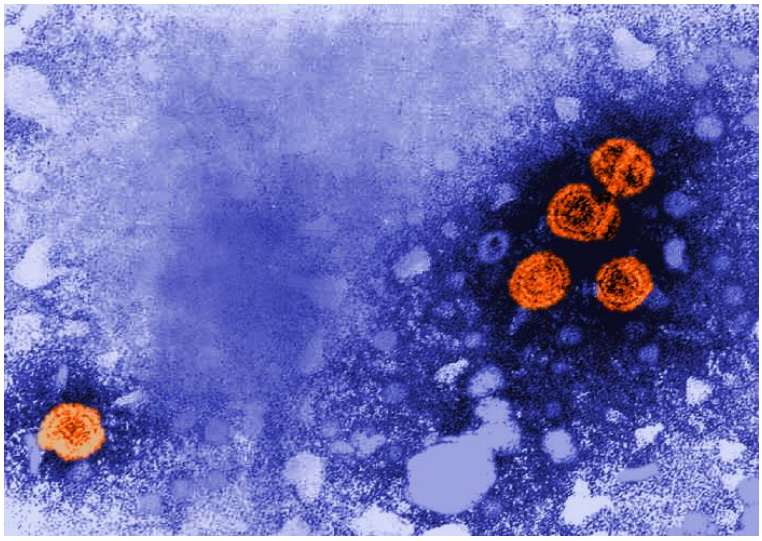
Hepatitis A Outbreak

- A large community outbreak of hepatitis A began in late 2016 in San Diego County, primarily affecting persons experiencing homelessness and persons using illicit drugs. During 2017, there were 571 outbreak cases, including 20 deaths, contributing to the highest number of reported hepatitis A cases in the county since the pre-vaccine era.
- The criteria used to determine outbreak cases differed from the CDC/CSTE surveillance case criteria used to determine the case count for 2017. Not all cases met outbreak criteria and some outbreak cases did not meet CDC/CSTE criteria and thus are not included in the annual case count.
- Although outbreak cases continued to be reported in 2018, control measures, including efforts to vaccinate the affected population, had significantly reduced the number of newly reported cases by the end of 2017.
- More information on the outbreak can be found on the County hepatitis A website. The outbreak and the County response are detailed in an After Action Report. Links to information on other outbreaks affecting similar populations around the country can be found on the CDC 2017 hepatitis A outbreak website.

HEPATITIS B

Disease Info

Infectious agent: Hepatitis B virus, a member of the family Hepadnaviridae
Incubation: Usually 45-180 days, range 2 weeks-9 months
Mode of transmission: Person-to-person through percutaneous or mucosal contact with infected blood, semen, or other body fluid. This includes activities such as sex with an infected partner, sharing of drug-injection equipment (needles, syringes, etc.), birth to an infected mother (perinatal), direct contact with blood or open sores of an infected person, needle sticks, sharing of items such as razors or toothbrushes with an infected person.
Symptoms: Acute symptoms include fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark urine, light or gray stools, joint pain, jaundice; 1-2% of infected persons develop fulminant hepatitis; approximately 50% of acute infections are asymptomatic. Can lead to chronic infection, which is often asymptomatic. Complications can include cirrhosis, liver failure, and hepatocellular carcinoma.



Digitally-colorized transmission electron microscopic (TEM) image showing the presence of hepatitis B virions. The large round orange-colored virions are known as Dane particles.
Photo credit: CDC/Dr. Erskine Palmer, Public Health Image Library

Key Points

Acute Hepatitis B

- In 1991, a national strategy was implemented to eliminate hepatitis B virus infection in the United States, which included the routine vaccination of children. This has resulted in a decline in acute hepatitis B cases since the early 1990s, particularly among children born since 1991.
- In 1993, there were 92 cases of acute hepatitis B infection in San Diego County. In 2017, there were 13 cases reported, a decrease of 86%.
- In recent years, incidence rates of acute hepatitis B in San Diego County have been low and are comparable to rates for California. In 2017, the incidence in San Diego County was 0.4 per 100,000 population.
- All 13 cases of acute hepatitis B in 2017 were among adults aged 25 years and older.

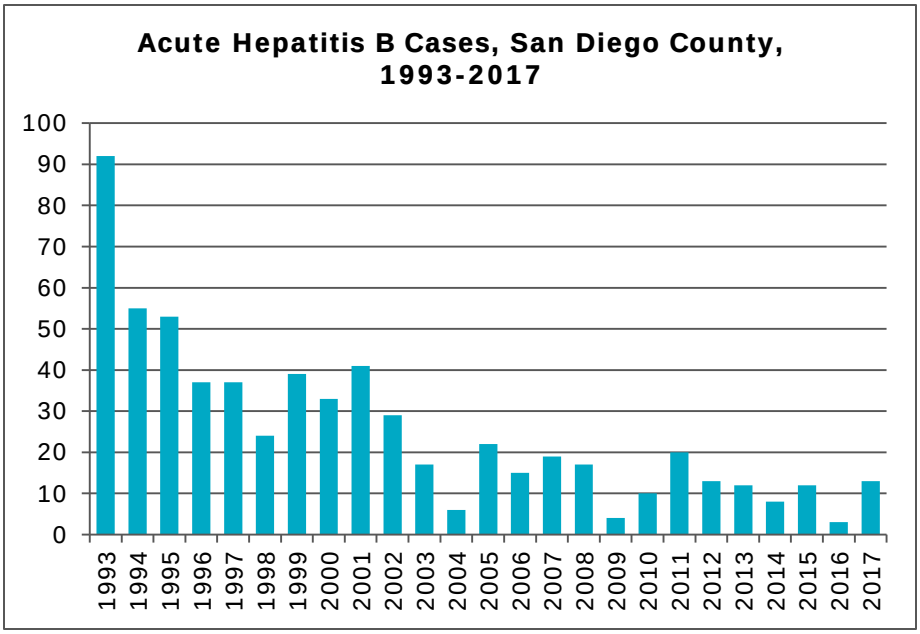
Chronic Hepatitis B

- In 2017, there were 868 cases of chronic hepatitis B reported among residents of San Diego County.
- The greatest number of newly reported cases in 2017 was in persons between the ages of 25-44 years (355 cases), followed by persons aged 45-64 years (319 cases).
- Rates of newly reported cases were highest in the Central and North Central HHSA Regions of San Diego County.

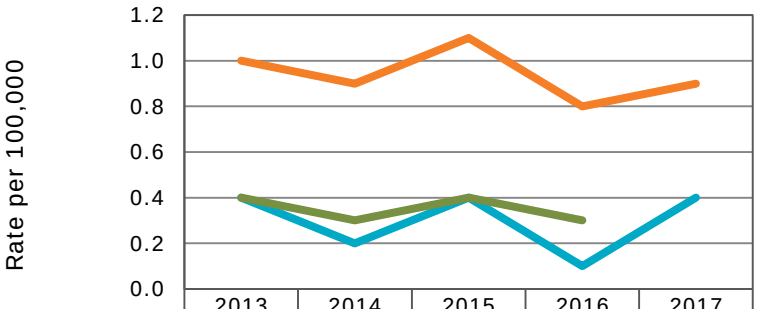
For more information:

- Centers for Disease Control and Prevention (CDC) Hepatitis B website
- California Department of Public Health (CDPH) Hepatitis B website
- CDC Hepatitis B Perinatal Transmission webpage
- CDC/CSTE Acute Hepatitis B Case Definition
- CDC/CSTE Chronic Hepatitis B Case Definition
- CDC/CSTE Perinatal Hepatitis B Virus Infection Case Definition
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book) – Hepatitis B Virus
- CDC Hepatitis B Vaccination webpage

HEPATITIS B, ACUTE



Acute Hepatitis B Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.4	0.2	0.4	0.1	0.4
California	0.4	0.3	0.4	0.3	*
United States	1.0	0.9	1.1	0.8	0.9

*California data for 2017 were not available at publication.

Perinatal Hepatitis B Infections

Pregnant women infected with the hepatitis B virus (HBV) can transmit the infection to their infant at birth, either through vaginal delivery or through cesarean section. To prevent perinatal transmission, national guidelines in the United States include the following recommendations:

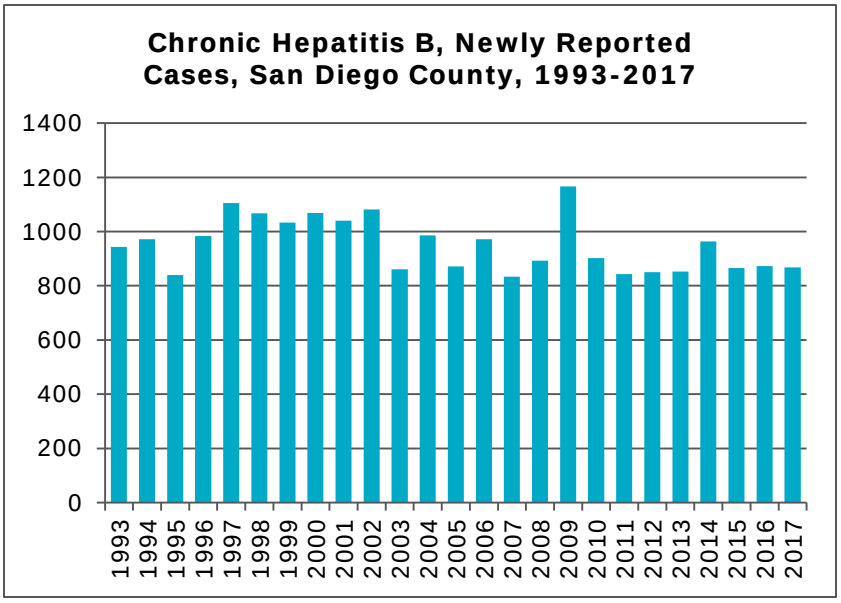
1. Universal screening of pregnant women at each pregnancy.
2. HBV DNA screening of pregnant women positive for HBsAg to guide the use of maternal antiviral therapy.
3. Case management of mothers who test positive for HBV surface antigen as well as their infants.
4. Postexposure immunoprophylaxis within 12 hours of birth for infants born to HBV-infected mothers.
5. Routine vaccination of all infants with the HBV vaccine series, starting with the first dose at birth.
6. HBsAg and anti-HBs testing should be performed one to two months after completion of the vaccine series at age nine to 12 months

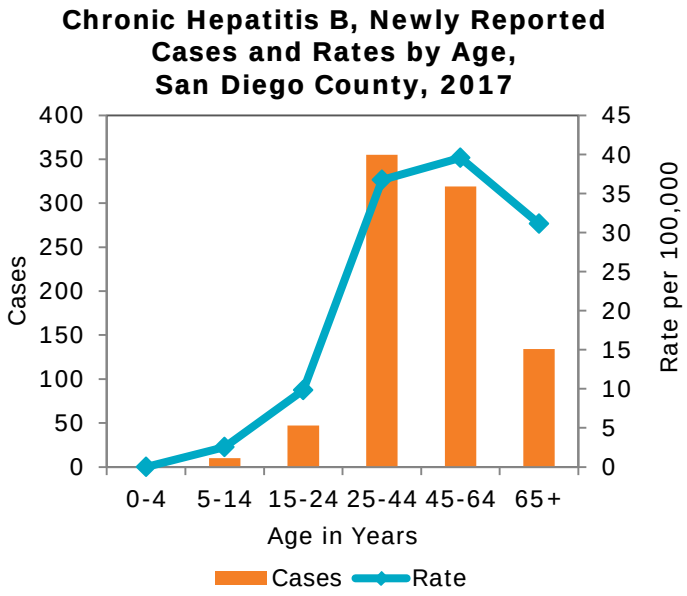
In 2017, there were no cases of perinatal HBV infection in San Diego County. Nationally, 19 cases of perinatal infection were reported.

Notes:

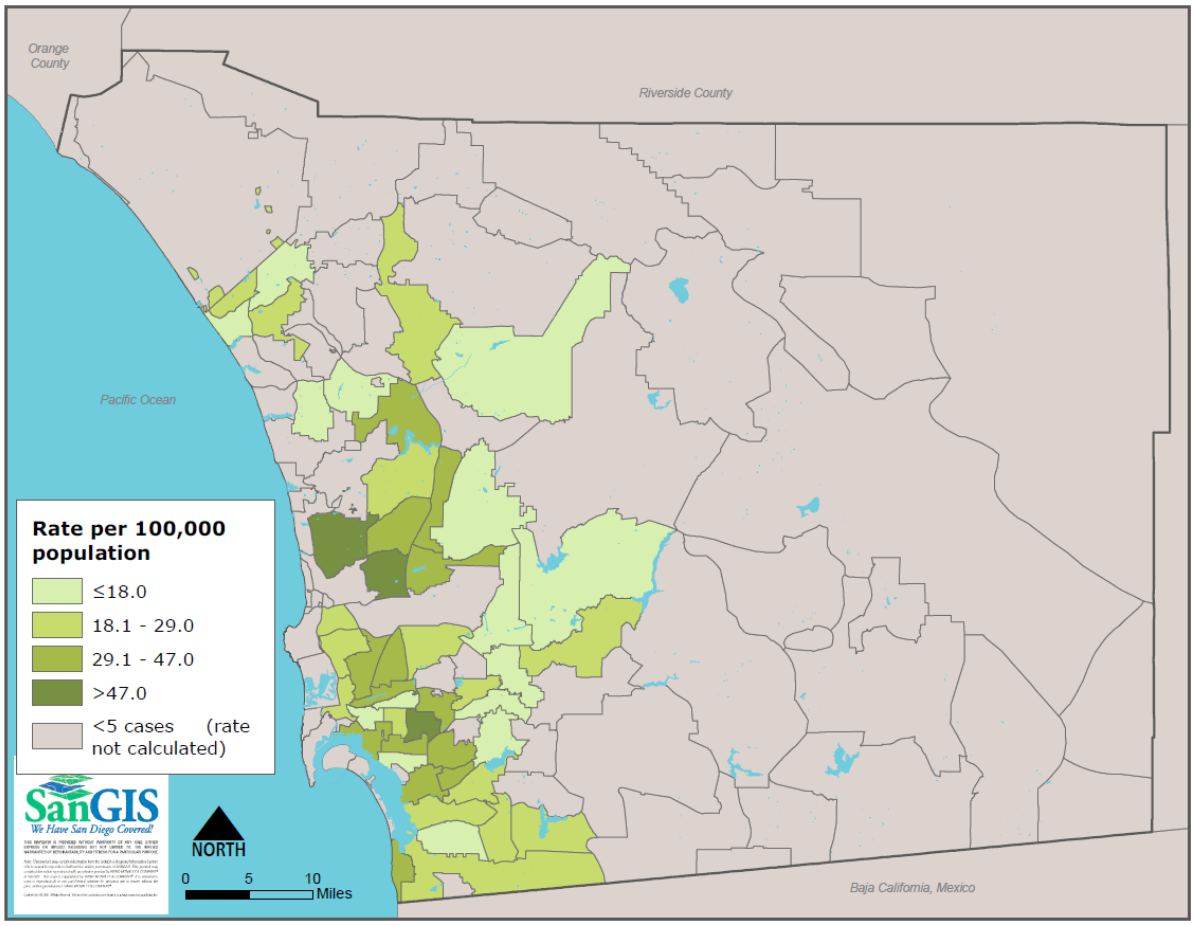
1. Acute hepatitis B case counts include confirmed cases following the CDC/CSTE case criteria. In 2012, the case definition was changed, eliminating the requirement of acute clinical presentation for patients with a negative hepatitis B surface antigen laboratory test within six months prior to a positive hepatitis B virus test.
2. Acute hepatitis B infections became nationally notifiable in 1966.
3. Chronic hepatitis B case counts include confirmed and probable cases following the CDC/CSTE case criteria. Changes have been made to the case definition as additional laboratory testing became available.
4. Chronic hepatitis B virus infection became nationally notifiable in 2003.
5. San Diego County chronic hepatitis B case counts include the first report of a diagnosis of chronic hepatitis B infection for a unique individual to the health department. National case counts for chronic hepatitis B may include duplicate case reports.
6. Counts and rates for acute and chronic hepatitis B infections include perinatal hepatitis B virus infections that meet case criteria.
7. In 2017, the case definition for perinatal HBV infections was changed to include HBeAg and HBV DNA laboratory tests.
8. Hepatitis B infection is vaccine-preventable. Currently, recombinant hepatitis B vaccines are used in the U.S., the first of which was licensed in the U.S. in 1986. In 1981, a plasma-derived vaccine was licensed in the U.S., but was removed from the market in 1992.

HEPATITIS B, CHRONIC





Chronic Hepatitis B, Rates of Newly Reported Cases by Zip Code of Residence, San Diego County, 2017



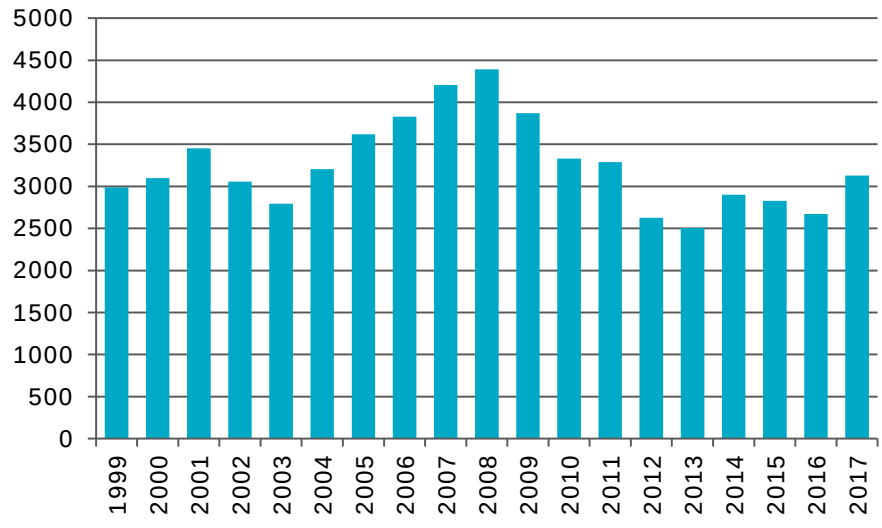
Cases indicating a detention facility as the address of residence are excluded from the calculation of rates by zip code.

HEPATITIS C, CHRONIC

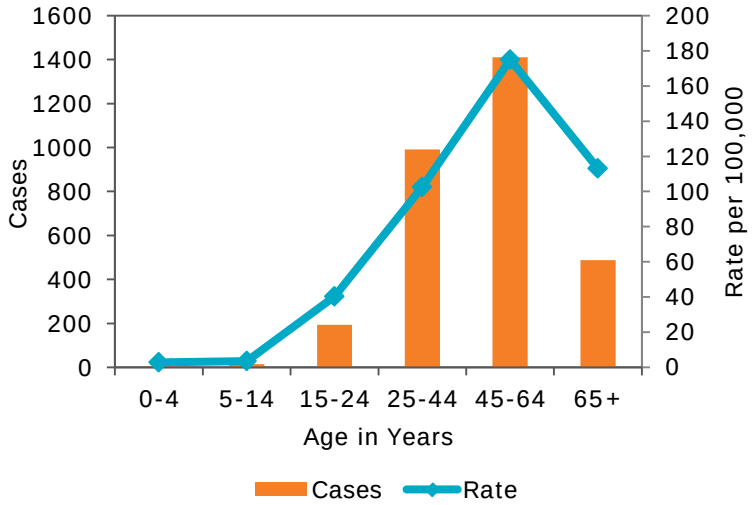
Disease Info

Infectious agent: Hepatitis C virus, an enveloped RNA virus
Incubation: 2 weeks to 6 months, average 4-12 weeks
Mode of transmission: Exposure to infected blood, frequently via injection drug use (shared equipment); infrequently, via sex, shared personal items (e.g., razors, toothbrushes), or health care procedures (e.g., injections)
Symptoms: Most chronic hepatitis C infections are asymptomatic until there is clinically apparent liver disease such as cirrhosis or cancer. Only 20-30% of acute infections will cause symptoms of hepatitis including jaundice, abdominal pain, fatigue, or poor appetite, but 75-85% of acute cases will become chronic.

Chronic Hepatitis C, Newly Reported Cases, San Diego County, 1999-2017



Chronic Hepatitis C, Newly Reported Cases and Rates by Age, San Diego County, 2017



Key Points

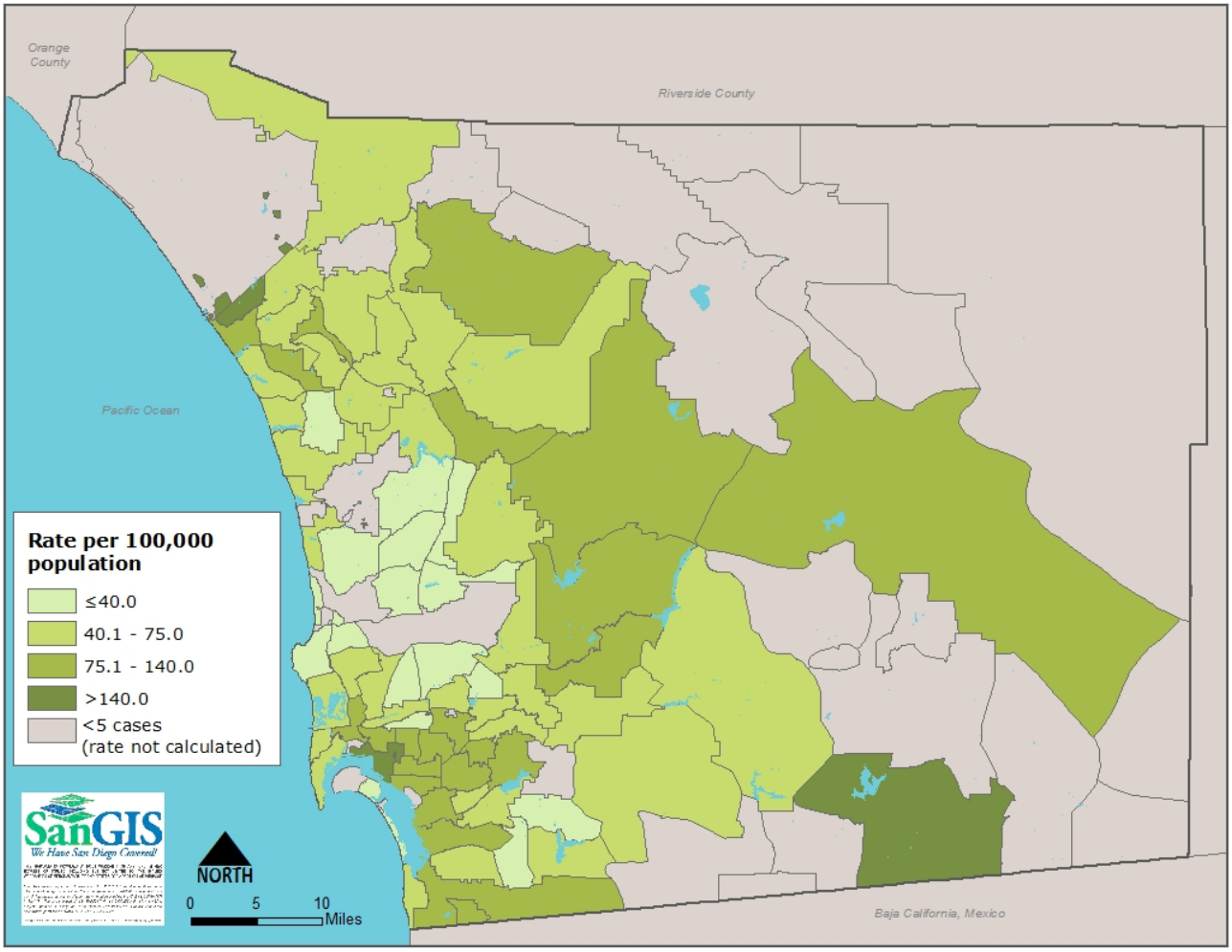
- There were 3,129 newly reported cases of chronic hepatitis C in San Diego County in 2017, slightly higher than the average of 2,700 cases over the previous five years and down from the peak of over 4,000 cases in 2007-2008.
- The rate of newly reported cases of chronic hepatitis C among San Diego County residents has ranged from 78.4-95.1 per 100,000 population between 2013 and 2017.
- In 2017, both the number of cases (1,417) of chronic hepatitis C and the rate of newly reported cases (175.8 per 100,000 population) were substantially higher among those aged 45-64 years than in any other age group. There were very few cases in children.
- The highest rates of newly reported chronic hepatitis C cases were among residents in the Central HHSA Region of San Diego County, with other pockets of higher rates distributed around the county. However, the high rates in some rural areas of the county with low populations should be interpreted with caution due to small case counts.

For more information:

- Centers for Disease Control and Prevention (CDC) Hepatitis C website
- CDC Viral Hepatitis Surveillance and Statistics website
- Know More Hepatitis Campaign website
- CDC/CSTE Hepatitis C, Chronic Case Definition
- California Department of Public Health (CDPH) Office of Viral Hepatitis Prevention website

HEPATITIS C, CHRONIC

Chronic Hepatitis C, Rates of Newly Reported Cases by Zip Code of Residence, San Diego County, 2017



Reports where a state or federal detention facility is indicated as the address of residence are excluded from the calculation of rates by zip code.

Notes:

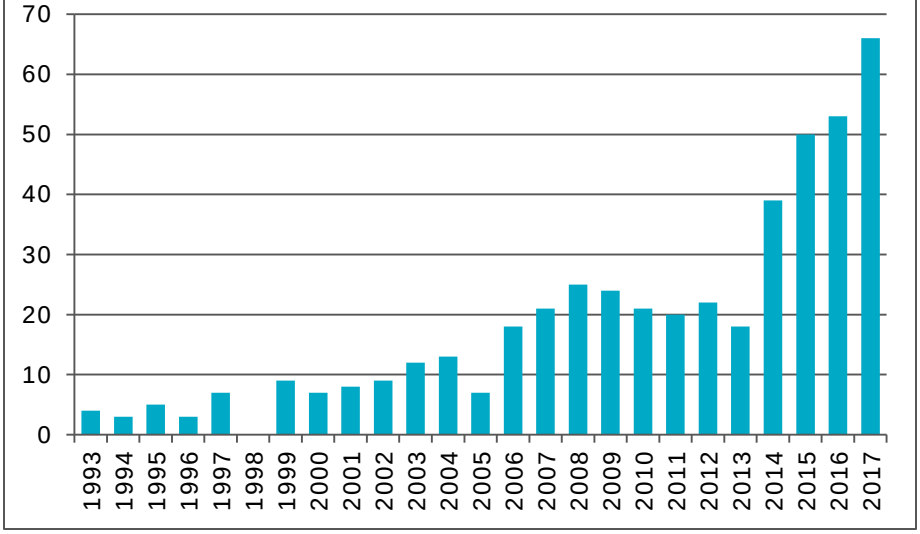
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Chronic hepatitis C became nationally notifiable in 2003. Over the past 15 years, it has alternately been referred to as Hepatitis C, Past or Present and Hepatitis C, Chronic, with varying case definitions. The term chronic hepatitis C is used here for all years.
3. Available tests and testing criteria have changed over the years.
4. Chronic hepatitis C reports are not investigated and are minimally evaluated; numbers should be interpreted with caution.
5. Cases are grouped into the year of first report to the San Diego County Epidemiology Program; this may not represent the year of infection or diagnosis and case-patients may not have been infected in San Diego County. Cases should be considered neither incident nor prevalent.
6. San Diego County counts include reports from Robert J. Donovan Correctional Facility (state facility), Western Region Detention Facility (federal facility), and Metropolitan Correctional Center (federal facility), although inmates may have originally come from other jurisdictions. These cases are excluded from the zip code map, but included in other counts.
7. Numbers differ from counts published by the California Department of Public Health (CDPH). CDPH obtains data from other sources, including the correctional system, and de-duplicates cases across local health jurisdictions.
8. Case counts in some rural areas are five or above, but still small; rates may be unstable and should be interpreted with caution.

LEGIONELLOSIS

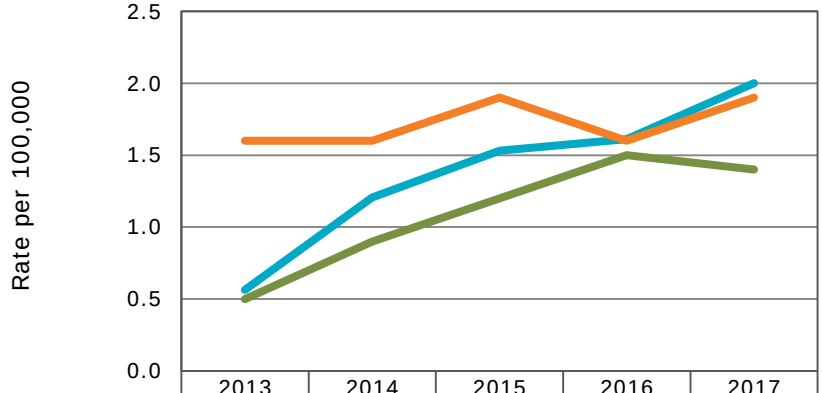
Disease Info

Infectious agent: *Legionella* bacteria, most commonly *L. pneumophila*
Incubation: Legionnaires' Disease usually 5-6 days, range 2-10 days; Pontiac Fever usually 24-48 hours, range 5-72 hours
Mode of transmission: Inhalation of small droplets of water in the air that contain the bacteria; less commonly by aspiration of drinking water
Symptoms: Two distinct syndromes: Legionnaires' Disease with symptoms of pneumonia, including cough, shortness of breath, fever, muscle aches and headaches; Pontiac Fever, a milder infection without pneumonia, with symptoms of fever and muscle aches

Legionellosis Cases, San Diego County 1993-2017



Legionellosis Incidence, San Diego County, California, and United States, 2013-2017

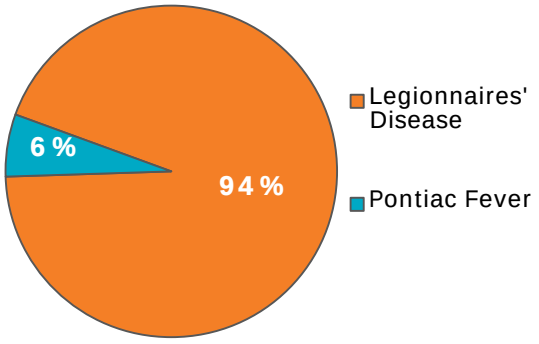


	2013	2014	2015	2016	2017
San Diego County	0.6	1.2	1.5	1.6	2.0
California	0.5	0.9	1.2	1.5	1.4
United States	1.6	1.6	1.9	1.6	1.9

Key Points

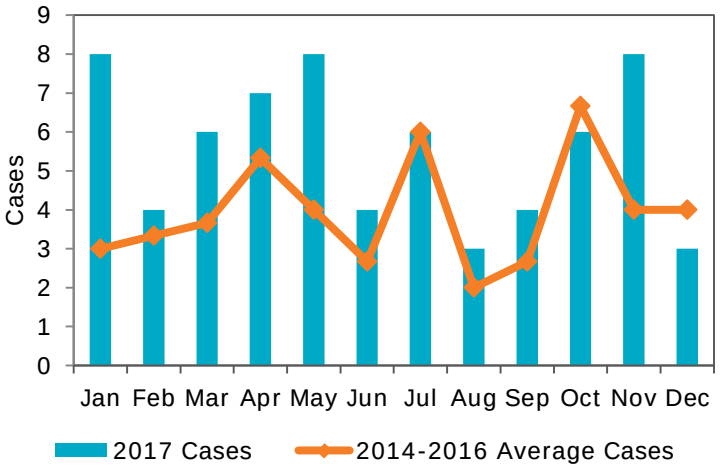
- In 2017, there were 66 cases of legionellosis in San Diego County. This is an increase of 25% compared to 2016 (53 cases) and a 164% increase compared to 2008 (25 cases). The increase in cases most likely can be attributed to increased testing by providers.
- In 2017, the incidence rate of legionellosis in San Diego County (2.0 per 100,000) was comparable to that of the United States and slightly higher than the California rate. In prior years, national rates were higher than those for California and San Diego County.
- In 2017, the majority of legionellosis case-patients were diagnosed with Legionnaires' Disease (94%). Pontiac Fever is infrequently diagnosed due to mild symptoms.
- There was no seasonal trend for case counts in 2017.
- The majority of cases, and the highest rates, were seen among older adults. A total of 34 cases were among persons aged 65 years and older (incidence rate of 7.9 per 100,000).
- Most cases (71%) were community-acquired. Eighteen percent of cases were possibly travel-associated.
- In 2017, the case-fatality rate among legionellosis cases in San Diego County was 12.7%.

Legionellosis Cases by Disease Classification, San Diego County, 2017

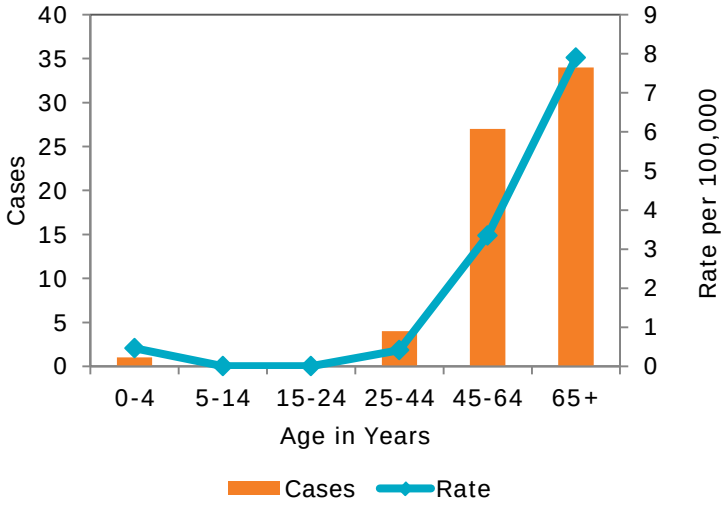


LEGIONELLOSIS

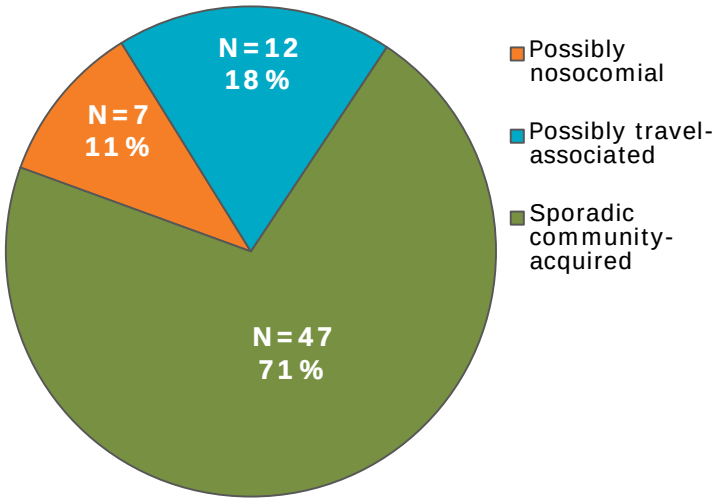
Legionellosis Cases by Month of Onset, San Diego County, 2017



Legionellosis Cases and Rates by Age, San Diego County, 2017



Legionellosis Cases by Transmission Type, San Diego County, 2017



Notes:

1. Counts include confirmed cases following the CDC/CSTE case criteria.
2. Legionellosis became nationally notifiable in 1976.
3. In 2005, the CDC/CSTE case criteria were revised to include classification criteria for travel-associated cases of legionellosis.
4. A case that has a history of spending at least one night away from home, either in the country of residence or abroad, in the ten days before onset of illness is classified as "travel-associated".
5. Nosocomial transmissions are defined as follows: A case is classified as "definitely nosocomial" if the patient was hospitalized continuously for ≥10 days before the onset of *Legionella* infection. A case is classified as "possibly nosocomial" if the patient was hospitalized 2-9 days before the onset of *Legionella* infection. Cases with no inpatient or outpatient hospital visits in the 10 days prior to onset of symptoms are not nosocomial.
6. Denominators for case classification and case-fatality rate calculations are cases with available information, ranging from 62-63 of 66 total cases.

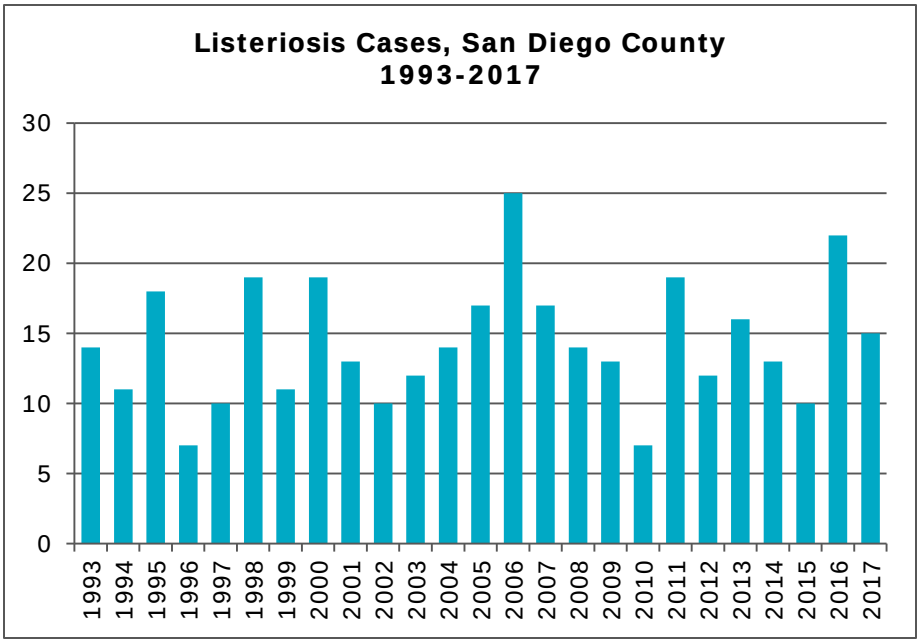
For more information:

- Centers for Disease Control and Prevention (CDC) *Legionella* website
- California Department of Public Health (CDPH) Legionellosis website
- CDC/CSTE Legionellosis Case Definition

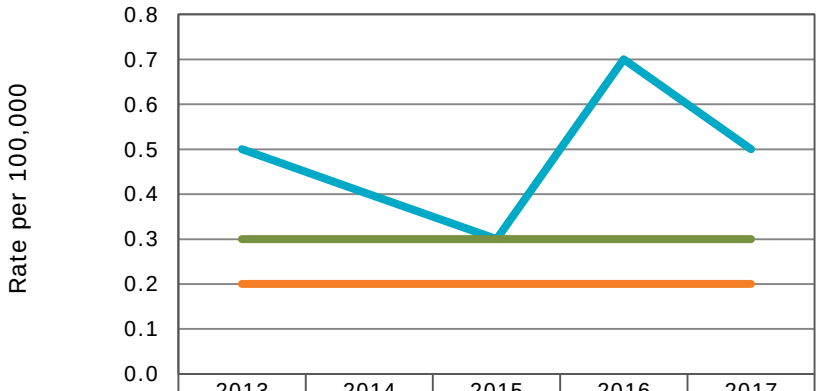
LISTERIOSIS

Disease Info

Infectious agent: *Listeria monocytogenes*, a bacterium
Incubation: Usually 1-4 weeks, range 3-70 days
Mode of transmission: Consumption of contaminated foods such as raw sprouts, deli meats and hot dogs, raw milk, soft cheeses, and ready-to-eat cold, smoked, or raw seafood
Symptoms: High fever, headache, neck stiffness, confusion, sometimes diarrhea; infections during pregnancy can lead to miscarriage, stillbirth, premature delivery, or infection of the newborn



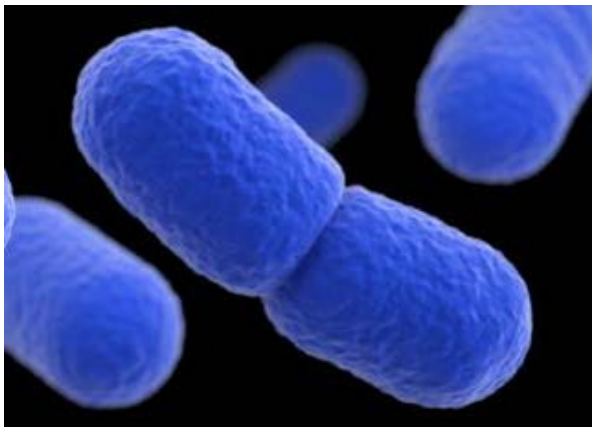
Listeriosis Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.5	0.4	0.3	0.7	0.5
California	0.3	0.3	0.3	0.3	0.3
United States	0.2	0.2	0.2	0.2	0.2

Key Points

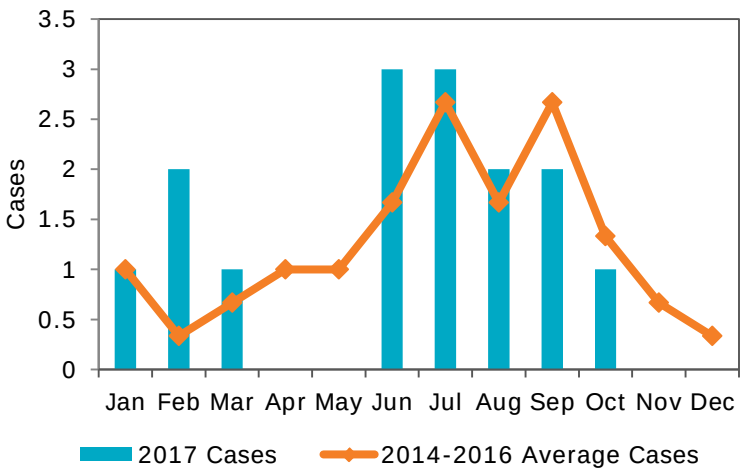
- In 2017, there were 15 cases of listeriosis in San Diego County, a decrease from 22 cases in 2016, but comparable to the average annual case count over the last ten years (14.3).
- The incidence rate of listeriosis in 2017 was higher in San Diego County (0.5 per 100,000) than in California (0.3 per 100,000) and the United States (0.2 per 100,000).
- As in previous years, on average, case counts in 2017 were highest during the months of June to September.
- The majority of cases in San Diego County (67%) were among persons aged 65 years and older.
- Listeriosis case-patients reported consuming foods such as Mexican-style soft cheeses (60%), other soft cheeses (44%), cold cuts (33%) and refrigerated, smoked or cured seafood (33%).
- Two listeriosis case-patients in San Diego County in 2017 were pregnant women. One of the case-patients also had underlying medical conditions. Neither pregnancy resulted in a negative outcome.
- In 2017, there were two deaths due to listeriosis in San Diego County (13.3% case-fatality rate).



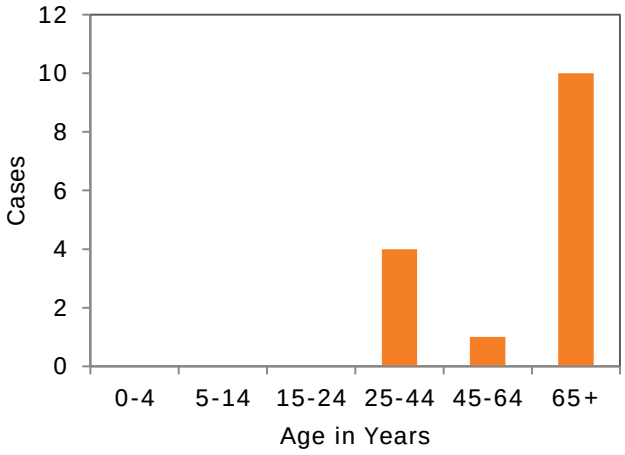
3D computer-generated image of a grouping of *Listeria monocytogenes* bacteria.
Photo credit: CDC/ James Archer, Public Health Image Library

LISTERIOSIS

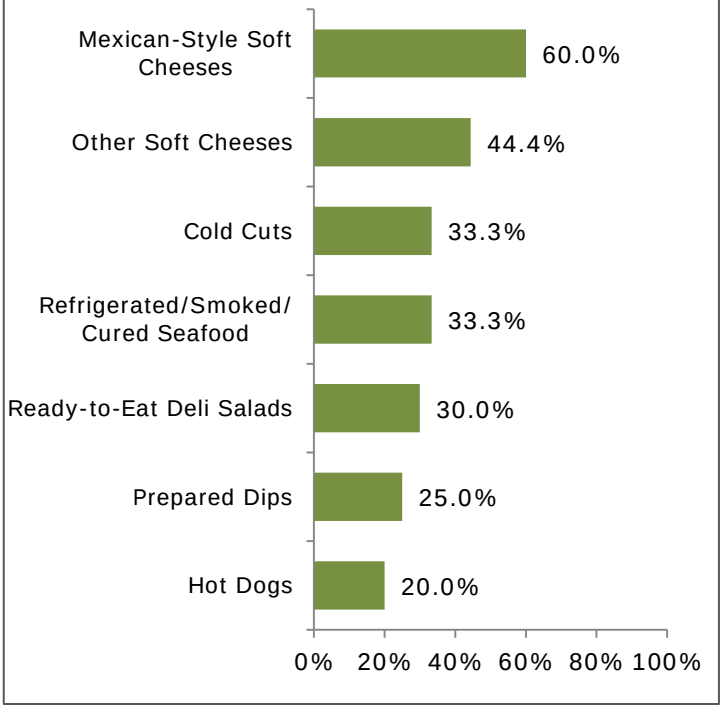
Listeriosis Cases by Month of Onset, San Diego County, 2017



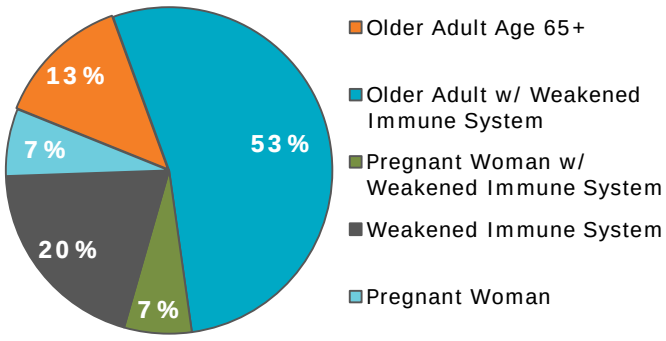
Listeriosis Cases by Age, San Diego County, 2017



Food Consumption Reported by Listeriosis Case-Patients, San Diego County, 2017



Listeriosis Risk Groups, San Diego County, 2017



Notes:

1. Counts include confirmed cases following the CDC/CSTE case criteria.
2. Listeriosis became nationally notifiable in 2000.
3. Denominators for case-fatality rate and food consumption calculations are cases with available information, ranging from 8-15 of 15 total cases.
4. Food consumption includes items consumed in the 4 weeks prior to illness based on self-report. Food items are potential sources as reported by case-patients, not confirmed sources of infection.

For more information:

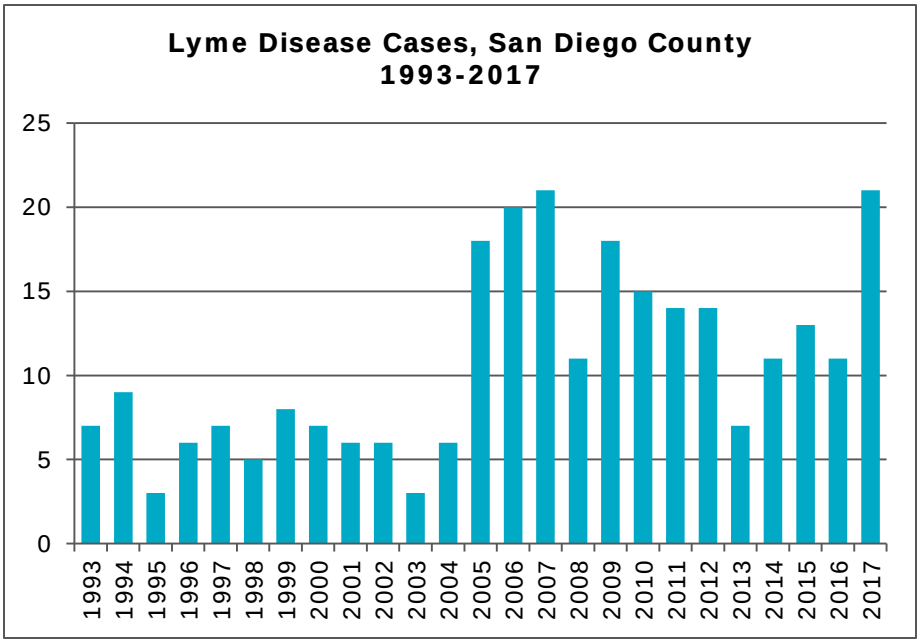
- Centers for Disease Control and Prevention (CDC) Listeriosis website
- California Department of Public Health (CDPH) Listeriosis website
- CDC/CSTE Listeriosis Case Definition

LYME DISEASE

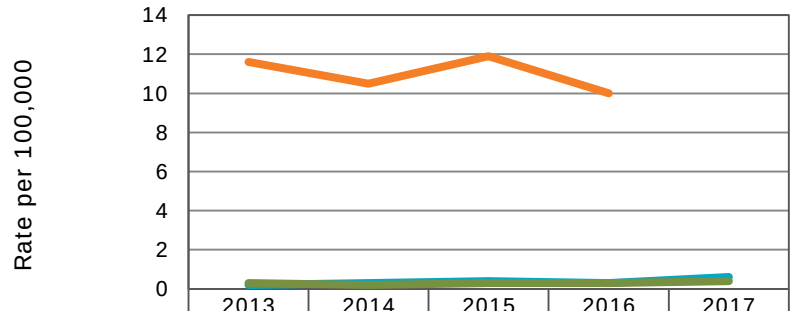
Disease Info

Infectious agent: *Borrelia burgdorferi*, a bacterium
Incubation: Usually 7-10 days, range 3-30 days
Mode of transmission: Vectorborne, through the bite of infected ticks: *Ixodes scapularis* (the blacklegged tick, or deer tick) in the northeastern, mid-Atlantic, and north-central US; *Ixodes pacificus* (the Western blacklegged tick) on the Pacific coast
Symptoms: Early stage (3-30 days after tick bite) symptoms include fever, chills, headache, fatigue, muscle and joint aches, swollen lymph nodes, and a red, expanding skin rash (erythema migrans). Later stage symptoms include arthritis with joint swelling, particularly of the knees and other large joints, and nervous system signs, such as numbness, tingling, or pain in the arms and legs, or difficulties with memory and concentration.

Lyme Disease Cases, San Diego County 1993-2017



Lyme Disease Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.2	0.3	0.4	0.3	0.6
California	0.3	0.2	0.3	0.3	0.4
United States	11.6	10.5	11.9	10.0	*

*United States data for 2017 were not available at publication.

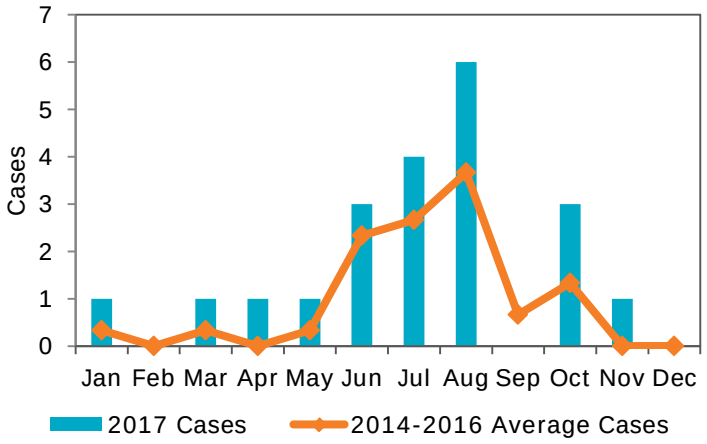
Key Points

- In 2017, 21 cases of Lyme disease were reported among residents of San Diego County.
- The incidence rate of Lyme disease among San Diego County residents has remained low between 2013 and 2017 (range 0.2-0.6 per 100,000).
- In 2017, the incidence of Lyme disease in San Diego County (0.6 per 100,000) was similar to California incidence (0.4 per 100,000), but much lower than United States incidence.
- In 2017, the majority of case-patients had an onset of illness during the summer months. This is consistent with the pattern in previous years. Human infections occur most often in the late spring to summer months when ticks are in the nymph stage of their life cycle and are difficult to detect due to their small size (less than 2mm).
- Three case-patients (14%) reported engaging in outdoor activities in San Diego County. One of these patients also had exposure in the Midwestern United States. Overall, 71% of case-patients reported engaging in outdoor activities outside of San Diego County.
- Signs and symptoms among case-patients varied. Common complaints included fever, fatigue, and joint pain. Two case-patients had an erythema migrans (EM) rash, and two case-patients had brief recurrent attacks of swelling in one or more joints.

The Western blacklegged tick, *Ixodes pacificus*, (shown here) is a known vector for the spirochetal bacteria *Borrelia burgdorferi*, which is the pathogen responsible for Lyme disease. Photo credit: CDC/ James Gathany, Public Health Image Library

LYME DISEASE

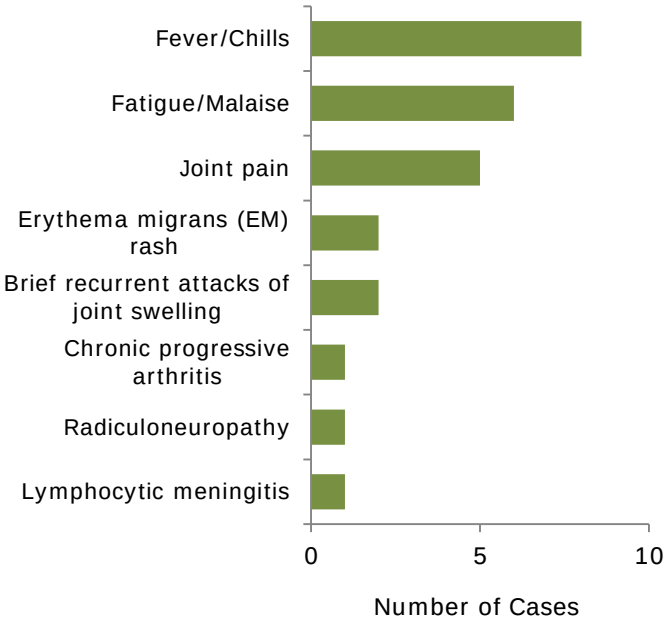
Lyme Disease Cases by Month of Onset, San Diego County, 2017



Outdoor Activity Locations Reported by Lyme Disease Cases, San Diego County, 2017

Location of Outdoor Activity	Cases	Percent
Northeastern United States	6	28.6
Midwestern United States	4	19.0
San Diego County	3	14.3
California – Sierra Nevada Mountains	2	9.5
Southern United States	1	4.8
Canada	1	4.8
Europe	1	4.8
None	2	9.5
Unknown	2	9.5

Signs and Symptoms Reported by Lyme Disease Case-Patients, San Diego County, 2017 (N=21)



Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Lyme disease became nationally notifiable in 1991.
3. US data for 2017 were not available at the time of publication.
4. Prior to 2008, the case definition included criteria for confirmed cases only. In 2008, the definition was expanded to include criteria for suspected and probable classifications. Laboratory criteria for diagnosis have changed over time.
5. Outdoor activity locations total more than 100% due to one person who reported two locations.
6. Data on signs/symptoms is presented for patients for whom information could be obtained, ranging from 19-21 of 21 total cases by sign/symptom type.

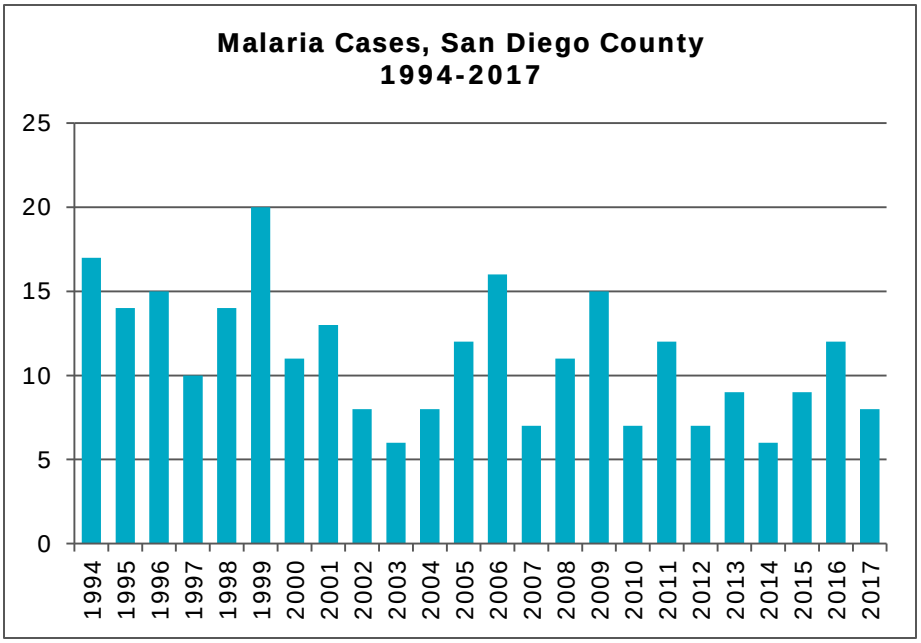
For more information:

- Centers for Disease Control and Prevention (CDC) Lyme Disease website
- California Department of Public Health (CDPH) Lyme Disease website
- CDC/CSTE Lyme Disease Case Definition
- County of San Diego Department of Environmental Health Lyme Disease website

MALARIA

Disease Info

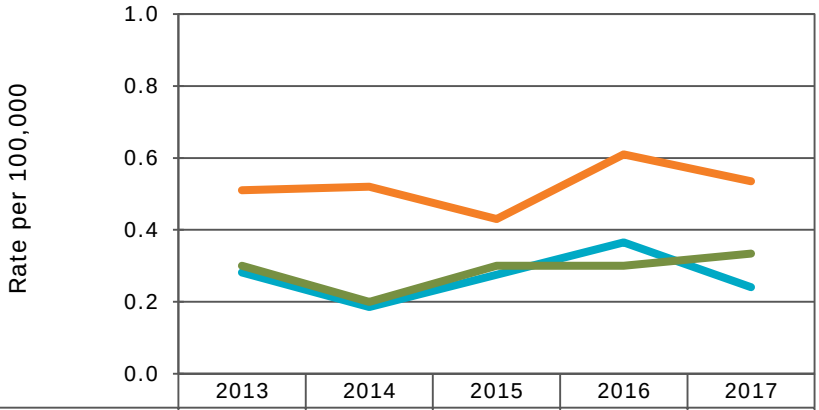
Infectious agent: *Plasmodium* species, protozoan parasites: *P. falciparum, P. vivax, P. ovale, P. malariae, P. knowlesi*
Incubation: Usually 7-30 days, depending on *Plasmodium* species (approximately 7-14 days for *P. falciparum*, 12-18 days for *P. vivax* and *P. ovale*, and 18-40 days for *P. malariae*)
Mode of transmission: Bite of an *Anopheles* mosquito
Symptoms: Fever, chills, sweats, headaches, body aches, general malaise, nausea and vomiting



Key Points

- There were eight cases of malaria among San Diego County residents in 2017, just below the average of 9.5 cases over the previous ten years.
- The incidence of malaria among San Diego County residents has been relatively stable between 2013 and 2017, ranging from 0.2-0.4 cases per 100,000 population.
- Malaria incidence in California was similar to San Diego, but United States incidence was marginally higher.
- Malaria is not endemic to the United States; all of the San Diego County cases in 2017 with a known travel history (seven) were imported from either Africa or Afghanistan.
- There is no clear seasonal distribution and most cases were in adults.
- Four of the eight cases were caused by *P. falciparum*, two by *P. vivax,* and one each by *P. ovale* and *P. malariae*.
- None of the case-patients took consistent chemoprophylaxis.

Malaria Incidence, San Diego County, California, and United States, 2013-2017

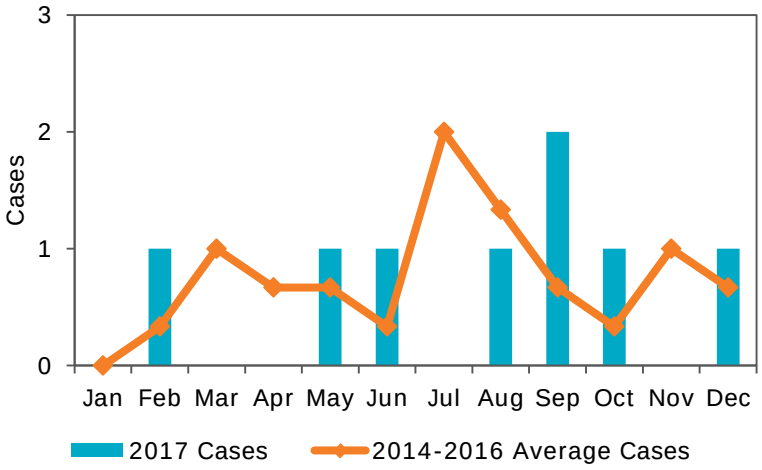


	2013	2014	2015	2016	2017
San Diego County	0.3	0.2	0.3	0.4	0.2
California	0.3	0.2	0.3	0.3	0.3
United States	0.5	0.5	0.4	0.6	0.5

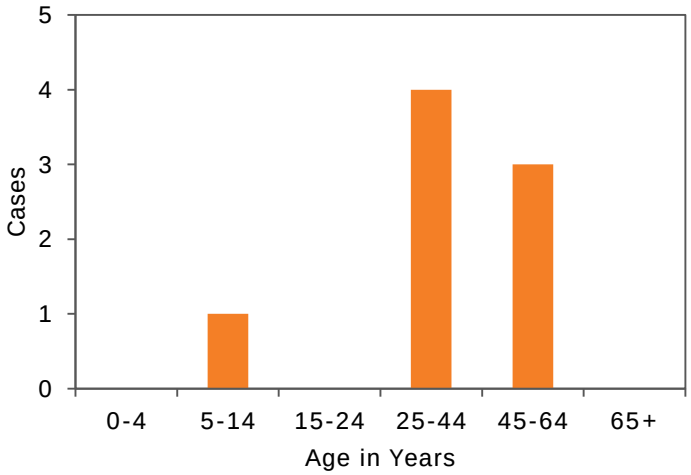
Anopheles quadriannulatus mosquito
Photo credit: CDC/ James Gathany, Public Health Image Library

MALARIA

Malaria Cases by Month of Onset, San Diego County, 2017



Malaria Cases by Age, San Diego County, 2017



Select Characteristics of Malaria Cases, San Diego County, 2017

Characteristic	Cases	Percent
Plasmodium species		
P. falciparum	4	50.0
P. vivax	2	25.0
P. ovale	1	12.5
P. malariae	1	12.5
Symptomatic	7	100.0
Hospitalized	7	100.0
Took chemoprophylaxis		
Yes	2*	28.6
No	5	71.4
Travel location		
Africa	5	71.4
Afghanistan	2	28.6
Reason for travel		
Visiting friends/relatives	3	42.9
Refugee/immigrant to U.S.	1	14.3
Tourism	1	14.3
Military and tourism	1	14.3
Business	1	14.3

*Missed doses

Notes:

1. Counts include confirmed cases following the CDC/CSTE case criteria.
2. Malaria has been nationally notifiable since 1944.
3. Rates not calculated by age group due to counts <5.
4. Laboratory information was available for all eight cases. Clinical and travel information was available for only seven cases; seven is the denominator for these calculations.
5. In 1993, there were 93 reported cases of malaria in San Diego County. The majority of these cases were in military personnel returning to Camp Pendleton after deployment in Somalia.

For more information:

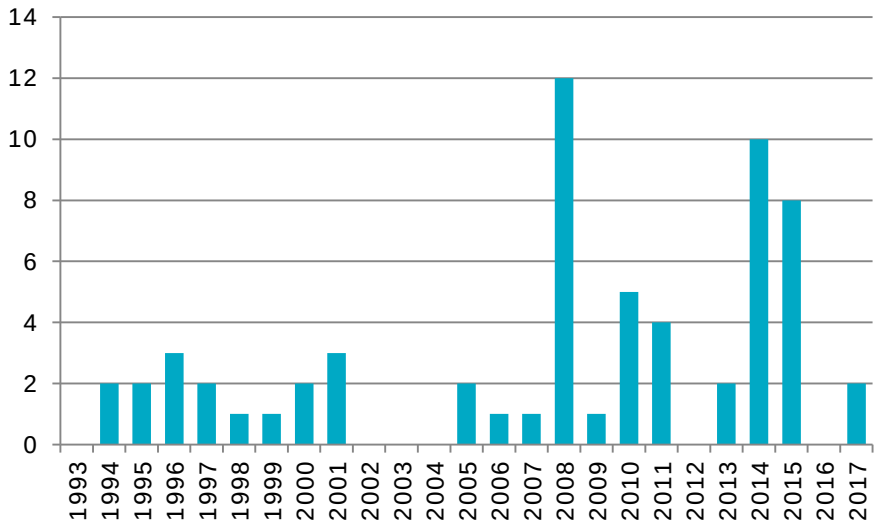
- Centers for Disease Control and Prevention (CDC) Malaria website
- CDC Health Information for International Travel (the Yellow Book) – Malaria
- CDC Malaria Maps
- CDC/CSTE Malaria Case Definition
- California Department of Public Health (CDPH) Malaria website
- World Health Organization Malaria website

MEASLES (RUBEOLA)

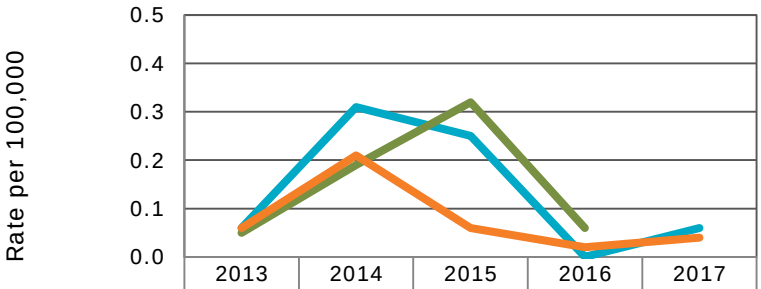
Disease Info

Infectious agent: Measles virus, an enveloped RNA virus of the genus *Morbillivirus* and the family Paramyxoviridae
Incubation: Usually 10 days, range 8-12 days
Mode of transmission: Primarily person-to-person by respiratory transmission, highly infectious
Symptoms: High fever (≥104°F), runny nose, cough, red eyes, and sore throat; followed by rash that spreads from head to rest of body

Measles Cases, San Diego County 1993-2017



Measles Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.06	0.31	0.25	0.00	0.06
California	0.05	0.19	0.32	0.06	*
United States	0.06	0.21	0.06	0.02	0.04

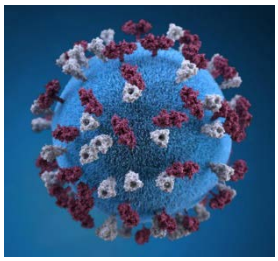
*California data for 2017 were not available at publication.

Notes:

1. Counts include confirmed cases following the CDC/CSTE case criteria.
2. Measles became nationally notifiable in 1944.
3. Measles is vaccine-preventable; a measles vaccine first became available in the U.S. in 1963.

Key Points

- In 2017, there were two cases of measles in San Diego County. Both case-patients were adults over the age of 25 years. One case-patient was likely infected during travel to Bali; the other patient was a secondary case exposed to the first case.
- In 2008, 12 cases were reported in San Diego County, all of which were associated with a single outbreak. Case-patients ranged in age from 0-9 years (median 6 years). All but one of the case-patients (92%) were unimmunized.
- Eighteen cases were reported in 2014-2015, 14 of which were part of a multi-jurisdictional outbreak that originated at the Disneyland amusement park in Orange County, California. San Diego County case-patients associated with this outbreak ranged in age from 0-49 years (median 9.5 years). The majority of the case-patients (86%) were unvaccinated. This outbreak, which occurred from December 2014 to April 2015, included at least 131 cases in California as well as residents of six other states, Mexico, and Canada.



3D graphical representation of a measles virus particle studded with glycoprotein tubercles.
Photo credit: CDC/ Allison M. Maiuri, MPH, CHES, Public Health Image Library

For more information:

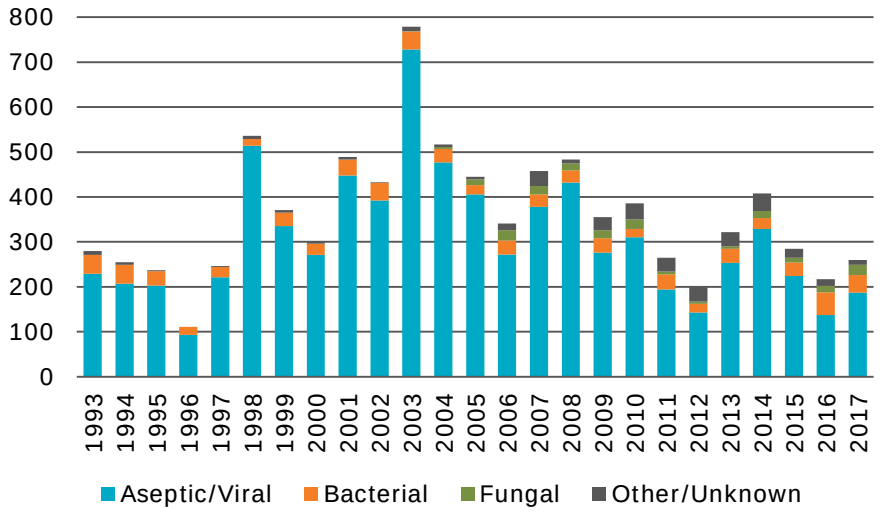
- Centers for Disease Control and Prevention (CDC) Measles website
- California Department of Public Health (CDPH) Measles website
- CDC/CSTE Measles Case Definition
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book) – Measles
- CDC Health Information for International Travel (the Yellow Book) – Measles

MENINGITIS

Disease Info

Infectious agent: Various viruses (e.g., non-polio enteroviruses and herpesviruses), bacteria (e.g., *Streptococcus pneumonaie*), fungus (e.g., *Cryptococcus*), and parasites, as well as some non-infectious causes; the etiology cannot always be identified
Incubation: Depends on the agent; for bacterial meningitis, usually 3-7 days
Mode of transmission: Bacteria and viruses are usually transmitted person-to-person (the specific mode varies by infectious agent), but most people infected with these bacteria and viruses will not develop meningitis
Symptoms: Meningitis is inflammation of the protective membranes around the brain and spinal cord; symptoms include fever, headache, stiff neck, photophobia, nausea, vomiting, altered mental status

Meningitis Cases by Type, San Diego County, 1993-2017



Notes:

1. Counts include confirmed, probable, and suspect cases based on California Department of Public Health recommendations for reporting viral and bacterial meningitis, which consider clinical findings, cerebral spinal fluid (CSF) cell counts, CSF glucose, and CSF protein, in addition to confirmed etiology.
2. Meningitis is not nationally notifiable. Specific causes of meningitis, such as arboviruses and meningococcus, are reportable at the national level. Meningitis of any etiology is reportable in California.
3. Counts do not include meningitis cases caused by infections that are separately reportable (e.g., West Nile virus, *Neisseria meningiditis*, *Listeria monocytogenes*, *Haemophilus influenzae* in children, tuberculosis, mumps).

For more information:

- Centers for Disease Control and Prevention (CDC) Meningitis website
- California Department of Public Health Viral Meningitis fact sheet

Key Points

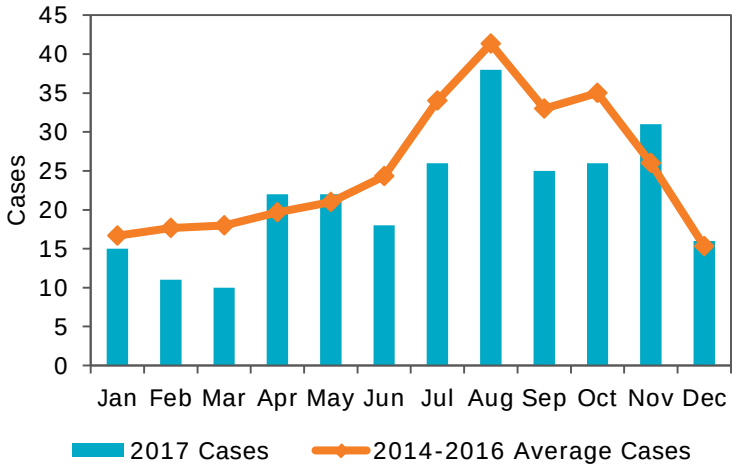
- In 2017, there were 260 cases of meningitis reported in San Diego County: 187 (72%) viral/aseptic, 39 (15%) bacterial, 23 (9%) fungal, and 11 (4%) other or unknown cause.
- Non-polio enteroviruses were the most common cause of viral meningitis in 2017. The most common etiology of bacterial meningitis was *Streptococcus pneumoniae*. Most fungal meningitides were caused by *Cryptococcus*, particularly *C. neoformans*.
- San Diego County experiences peak meningitis cases during the summer and fall months.
- While the largest number of cases was among adults ages 25-44 years, the highest rate (19.1 per 100,000 population) was in children under 5 years old.
- There was a university-associated cluster of 20 viral meningitis cases in the fall of 2017.

Etiology of Meningitis Cases, San Diego County, 2017

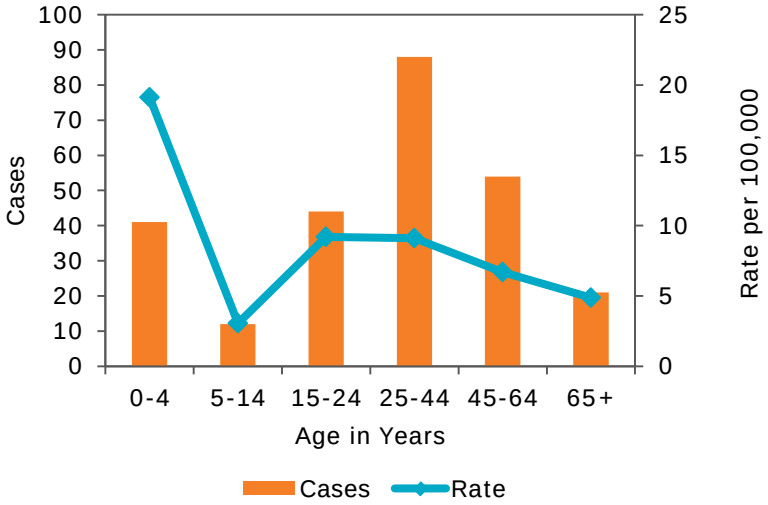
Etiology	Cases
Viral (n=187)	
Enterovirus	79
Herpes Simplex Virus	30
Varicella Zoster Virus	11
Unknown etiology	67
Bacterial (n=39)	
Streptococcus pneumonaie	7
Staphylococcus aureus	4
Haemophilus influenzae	3
Group B *Streptococcus*	3
Escherichia coli	2
Other bacteria	8
Unknown etiology	12
Fungal (n=23)	
Cryptococcus	21
Other or unknown fungus	2
Other/Unknown (n=11)	

MENINGITIS

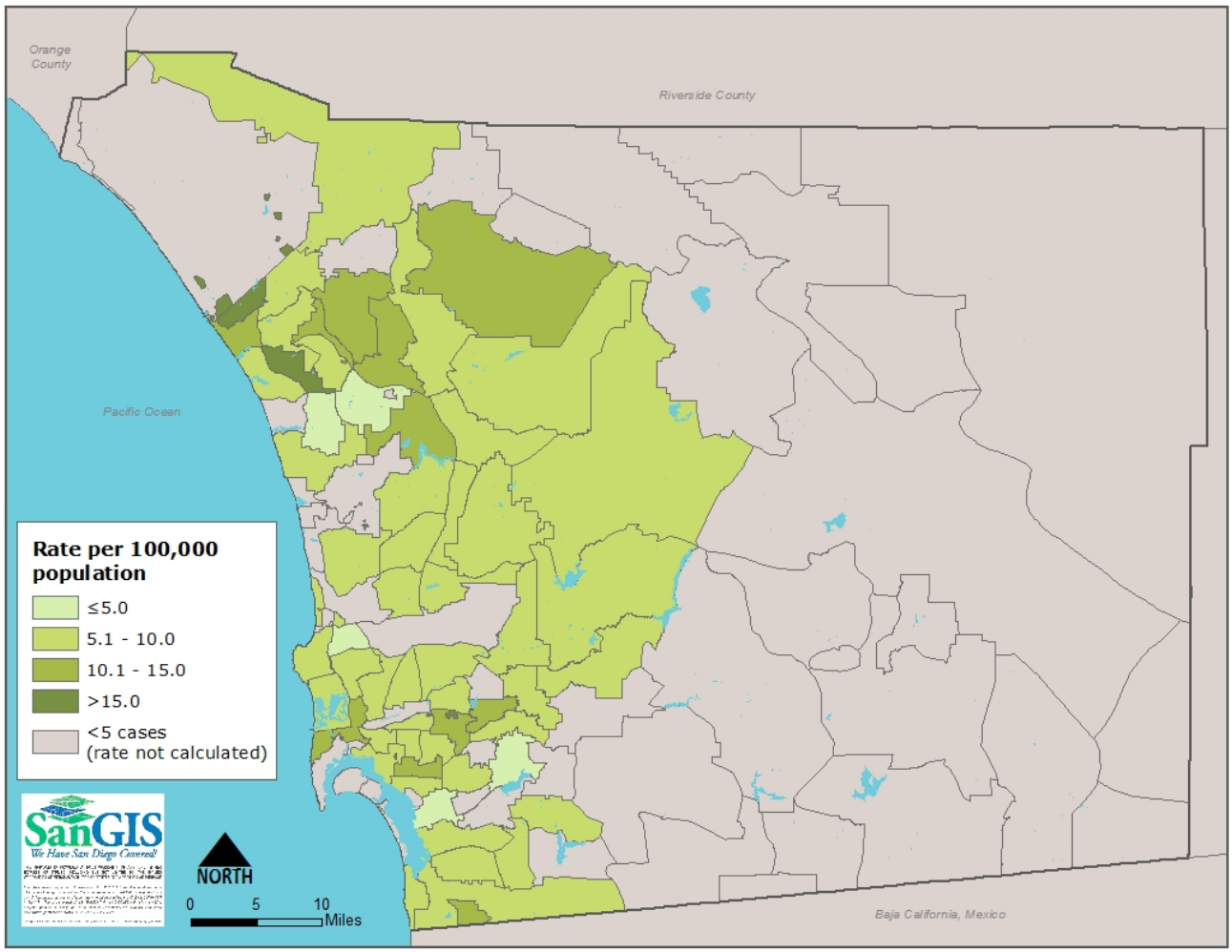
Meningitis Cases by Month of Onset, San Diego County, 2017



Meningitis Cases and Rates by Age, San Diego County, 2017



Meningitis Rates by Zip Code of Residence, San Diego County, 2015-2017

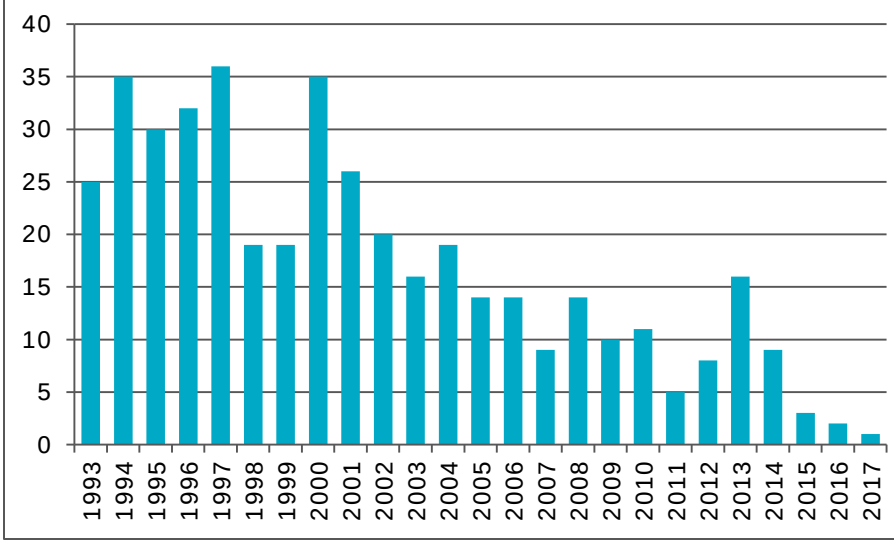


MENINGOCOCCAL DISEASE

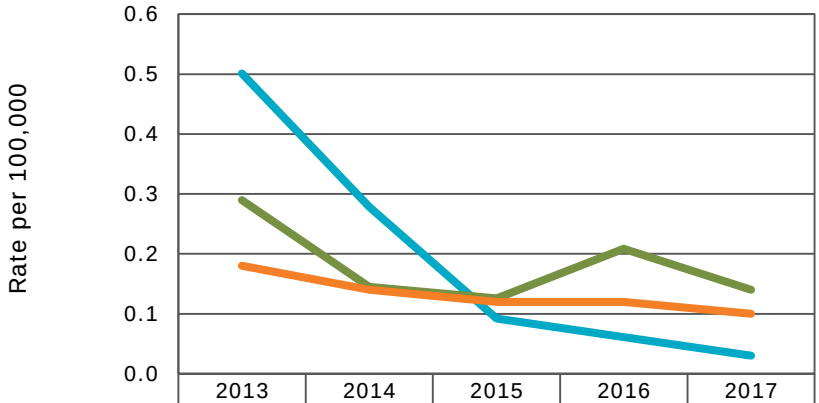
Disease Info

Infectious agent: *Neisseria meningitidis*, a gram-negative bacterium; 5 serogroups—A,B,C,W,Y—cause most invasive disease
Incubation: Usually 3-4 days, range 2-10 days
Mode of transmission: Shared respiratory and throat secretions, generally via close contact such as coughing or kissing
Symptoms: There are two common clinical syndromes: meningitis symptoms include fever, headache, stiff neck; septicemia (meningococcemia) symptoms include fever, fatigue, vomiting, body aches, cold hands/feet, dark purple rash

Meningococcal Disease Cases, San Diego County, 1993-2017



Meningococcal Disease Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.50	0.28	0.09	0.06	0.03
California	0.29	0.14	0.13	0.21	0.14
United States	0.18	0.14	0.12	0.12	0.10

Key Points

- There was one case of meningococcal disease reported among San Diego County residents in 2017. With the exception of an increase in cases reported in 2013, there has been an overall decline in cases since 2000.
- Incidence of meningococcal disease has declined in San Diego County, California, and the United States, and is at an historic low.
- The 2017 case in San Diego County was caused by serogroup B and presented clinically as meningococcemia.
- The case was in a male over 50 years old who survived the illness, which is often severe and can be deadly.

Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Meningococcal disease has been nationally notifiable since 1944.
3. Meningococcal disease is vaccine-preventable. A quadrivalent vaccine protective against serogroups A,C,W,Y was licensed in the United States (U.S.) in 2005. It is recommended for all 11-12-year-olds, with a booster at age 16. Serogroup B meningococcal vaccine was licensed in the U.S. in 2014.

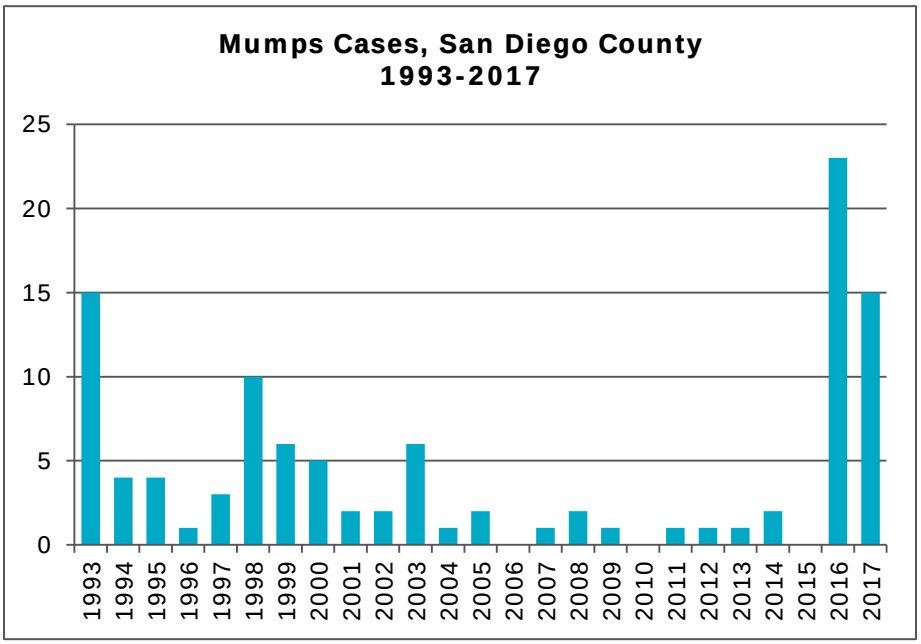
For more information:

- Centers for Disease Control and Prevention (CDC) Meningococcal Disease website
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book) – Meningococcal Disease
- CDC/CSTE Meningococcal Disease Case Definition
- California Department of Public Health (CDPH) Meningococcal Disease website
- County of San Diego Meningococcal Disease fact sheet

MUMPS

Disease Info

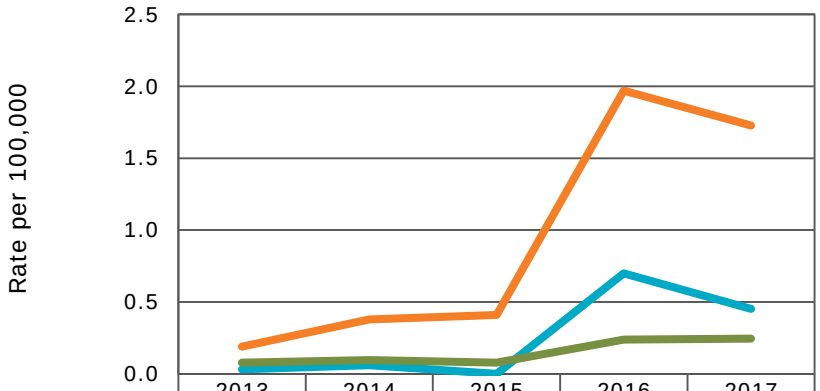
Infectious agent: Mumps virus, an RNA virus and member of the family Paramyxoviridae
Incubation: Usually 16-18 days, range 12-25 days
Mode of transmission: Respiratory droplets (e.g., saliva and mucous via sneezing, coughing, talking)
Symptoms: Fever, swelling and tenderness of salivary glands (usually the parotid—parotitis, unilateral or bilateral), headaches, muscle aches, fatigue, earache, sore throat, anorexia; may also be asymptomatic



Key Points

- There were 15 cases of mumps among San Diego County residents in 2017, a decrease from 2016, but still considerably higher than any other year in the previous decade.
- The mumps incidence rate in San Diego County was 0.5 per 100,000 population in 2017, and remains higher than California incidence, but lower than United States incidence. Incidence in the United States and San Diego County rose sharply in 2016, followed by a slight decrease in 2017.
- There was no distinct seasonal pattern in mumps cases in San Diego County in 2017.
- The median age of case-patients was 22 years, with a range of 10-68 years. The highest number and rate (eight cases, 1.7 per 100,000 population) were in the 15-24-year-old age group.
- Although there were no university-associated clusters of mumps cases in San Diego County in 2017 (compared to two in 2016), five case-patients were college or university students. In addition, seven case-patients had traveled internationally prior to onset of illness and may have been exposed outside the United States.

Mumps Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.0	0.1	0.0	0.7	0.5
California	0.1	0.1	0.1	0.2	0.2
United States	0.2	0.4	0.4	2.0	1.7

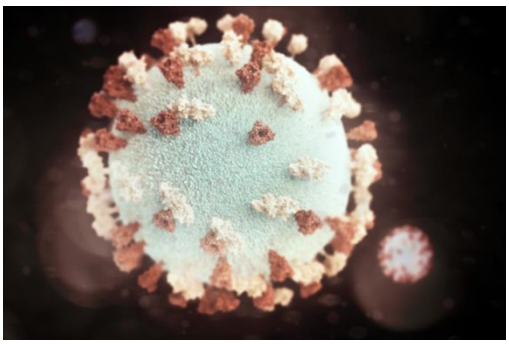
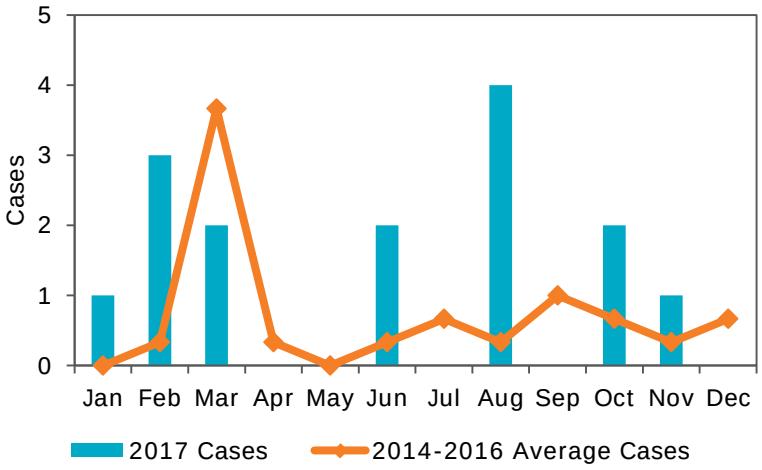


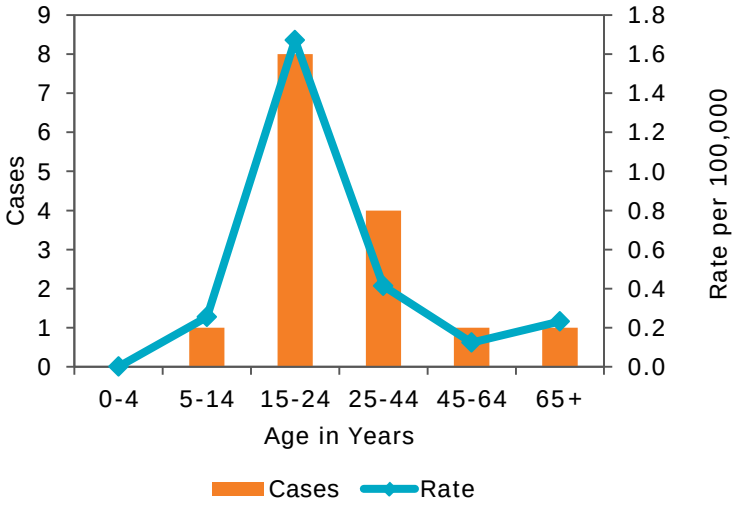
Illustration of a mumps virus particle studded with glycoprotein tubercles.
Credit: CDC/Alissa Eckert, Public Health Image Library

MUMPS

Mumps Cases by Month of Onset, San Diego County, 2017



Mumps Cases and Rates by Age, San Diego County, 2017



Select Characteristics, San Diego County Cases, 2017

5 COLLEGE OR UNIVERSITY STUDENTS (No clusters)

7 TRAVELED INTERNATIONALLY

MEDIAN AGE
22
YEARS

HOSPITALIZATIONS
2

Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Mumps has been nationally notifiable since 1968.
3. Mumps is vaccine-preventable; the vaccine became available in the United States in 1967.
4. Characteristics are not mutually exclusive, nor are they confirmed sources of exposure. A case-patient may have traveled internationally and been a college student. Colleges and universities, like other crowded environments, are settings with increased risk that infection will spread rapidly once introduced.

For more information:

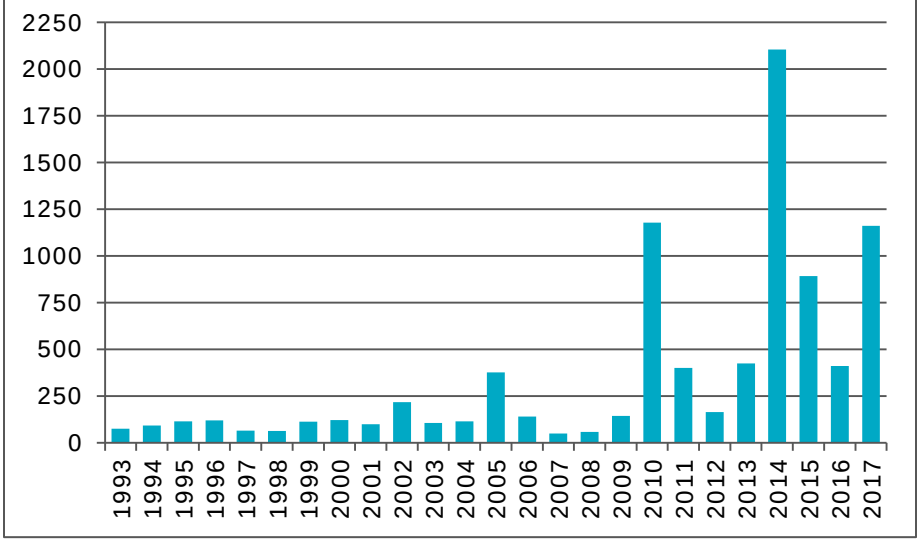
- Centers for Disease Control and Prevention (CDC) Mumps website
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book) – Mumps
- CDC/CSTE Mumps Case Definition
- California Department of Public Health (CDPH) Mumps website
- County of San Diego Immunization Program website

PERTUSSIS

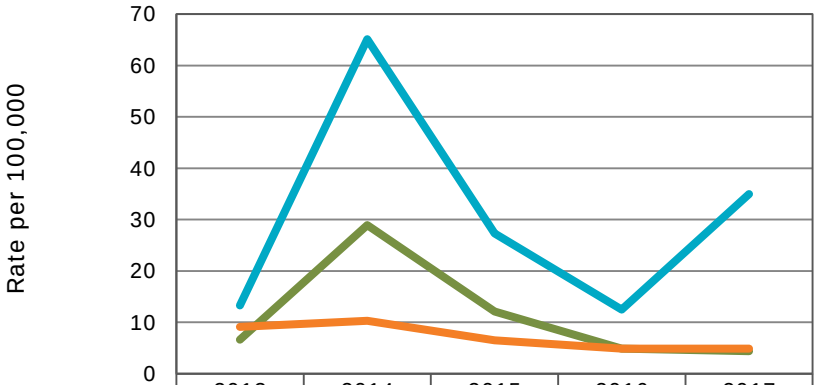
Disease Info

Infectious agent: *Bordetella pertussis*, a bacterium
Incubation: Usually 7-10 days, range 4-21 days
Mode of transmission: Person-to-person by the respiratory route, commonly by coughing or sneezing
Symptoms: Early symptoms include runny nose, low-grade fever, mild, occasional cough, apnea; later-stage symptoms include bursts of numerous, rapid coughs, after which the patient may produce a characteristic high-pitched inspiratory "whoop." Vomiting or exhaustion can occur after coughing. Symptoms can last 6-10 weeks, duration of cough may extend longer for some.

Pertussis Cases, San Diego County 1993-2017



Pertussis Incidence, San Diego County, California, and United States, 2013-2017



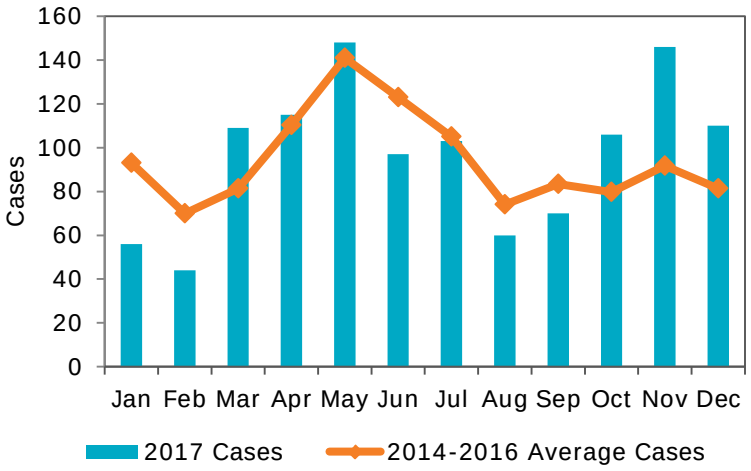
	2013	2014	2015	2016	2017
San Diego County	13.3	65.1	27.3	12.5	35.0
California	6.6	28.9	12.1	4.9	4.4
United States	9.1	10.3	6.5	4.9	4.9

Key Points

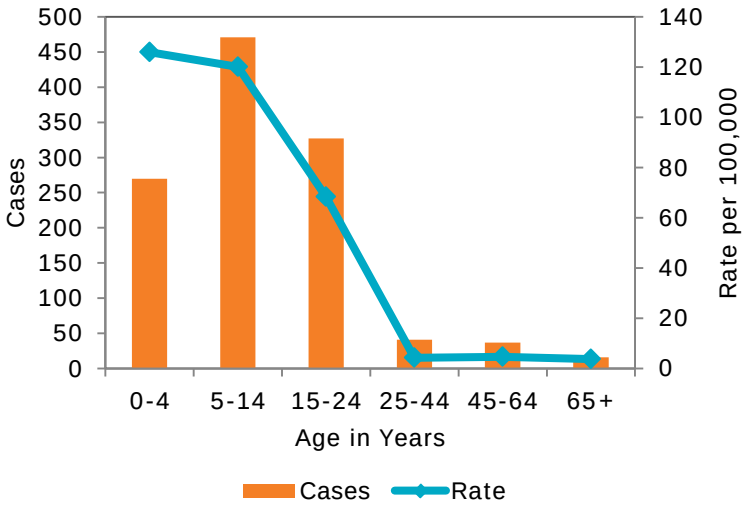
- In 2017, there were 1,162 cases of pertussis in San Diego County. Peaks in incidence occur every 3-5 years.
- The incidence rate of pertussis in 2017 was higher in San Diego County (35.0 per 100,000) than in California (4.4 per 100,000) and the United States (4.9 per 100,000).
- After the introduction of a whole-cell vaccine in the United States in the 1940s, the incidence rate of pertussis decreased from 150 cases per 100,000 in the early 1940s to eight per 100,000 population in 1960. In recent years, the incidence of pertussis has increased. More cases have been reported among children 7-10 and 13-14 years of age, and increases have been noted among children and adolescents who were fully-vaccinated. These increases are likely due to the transition to acellular vaccine usage in the 1990s.
- In late 2013-2014, a national media outreach campaign, along with local press releases, raised awareness about pertussis. This may have led to increased pertussis case identification and treatment by providers in 2014.
- Pertussis has no distinct seasonality, though, in recent years, peaks were noticed in the summer and winter months.
- In 2017, the majority of case-patients were between the ages of five and 17 years.
- Rates of infection were highest among white children aged 10-17 years (340.5 per 100,000), followed by Hispanic/ Latino infants under the age of six months (303.6 per 100,000).
- In 2017, incidence rates of pertussis were highest among residents of the North Coastal and North Inland HHSA Regions of the county.

PERTUSSIS

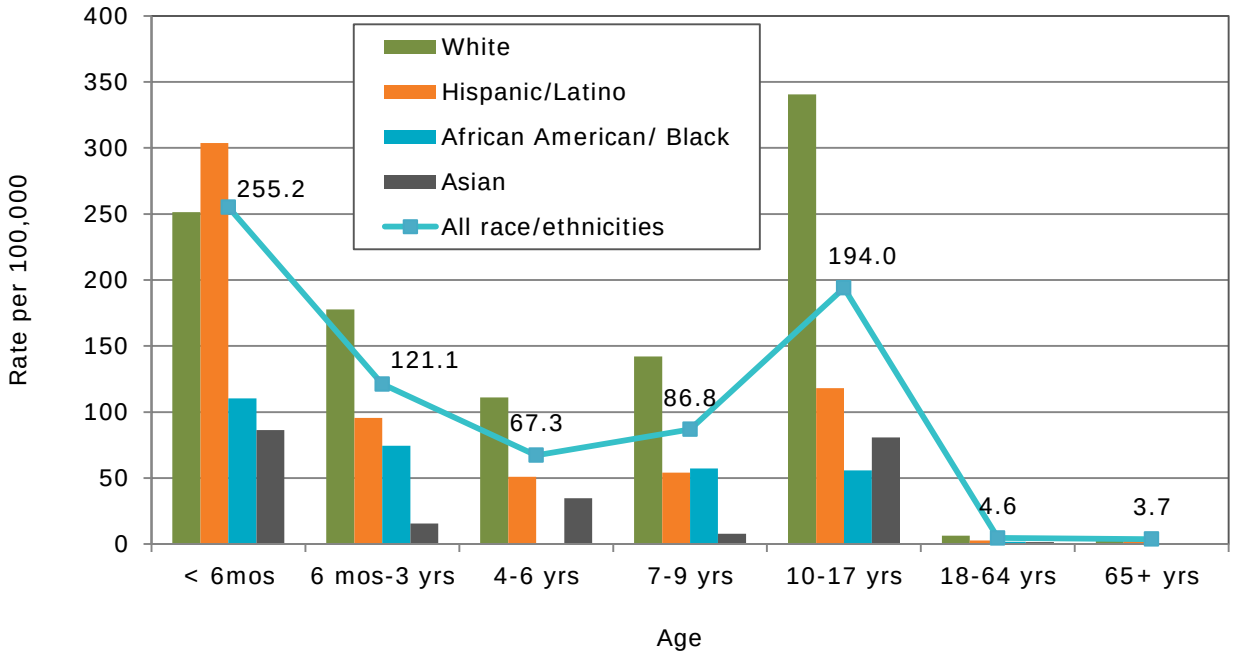
Pertussis Cases by Month of Onset, San Diego County, 2017



Pertussis Cases and Rates by Age, San Diego County, 2017



Pertussis Rates by Age and Race/Ethnicity, San Diego County, 2017

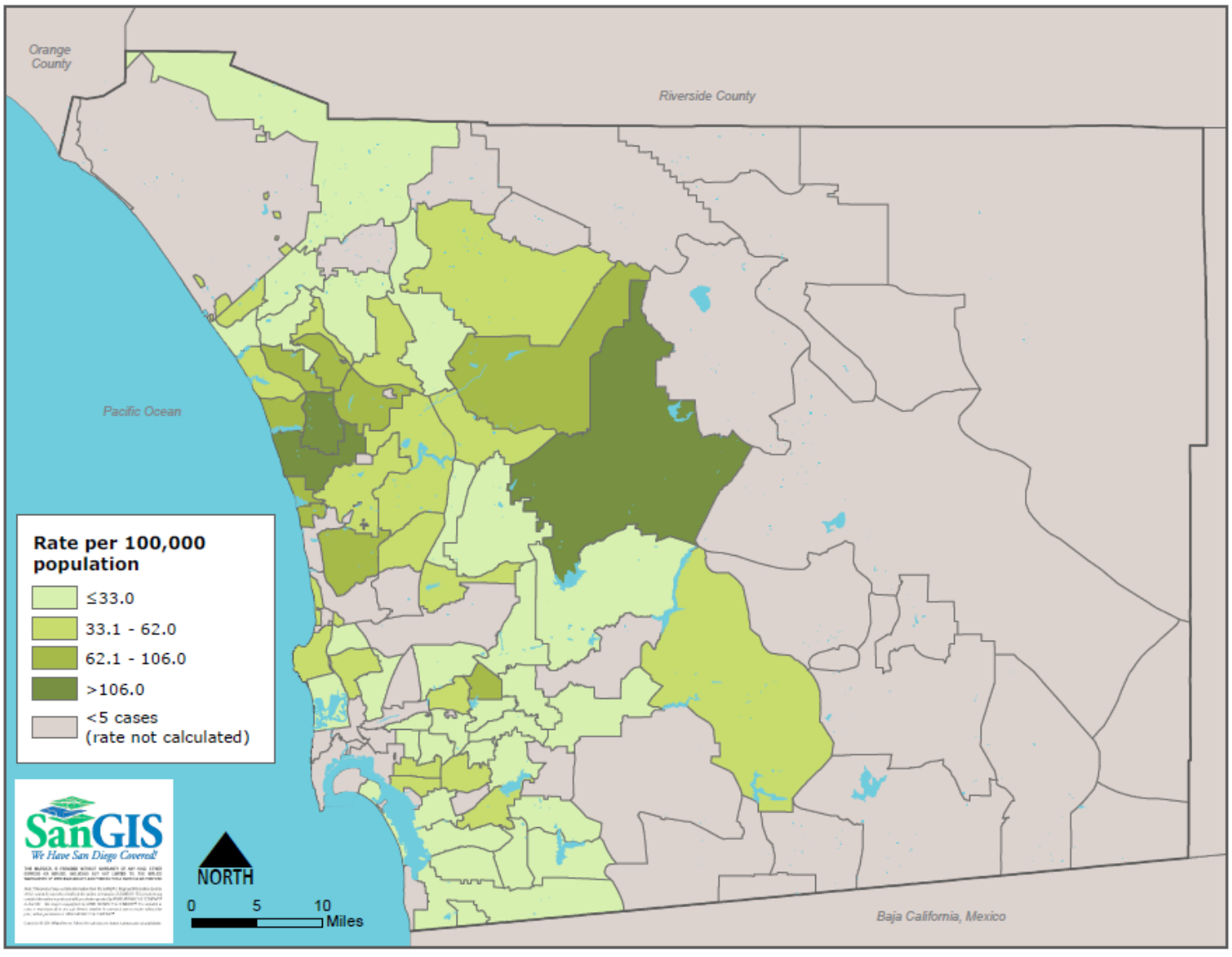


For more information:

- Centers for Disease Control and Prevention (CDC) Pertussis website
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book) – Pertussis
- California Department of Public Health (CDPH) Pertussis website
- CDC/CSTE Pertussis Case Definition
- CDPH Pertussis Case Definition
- CDC Immunization Schedules

PERTUSSIS

Pertussis Rates by Zip Code of Residence, San Diego County, 2017



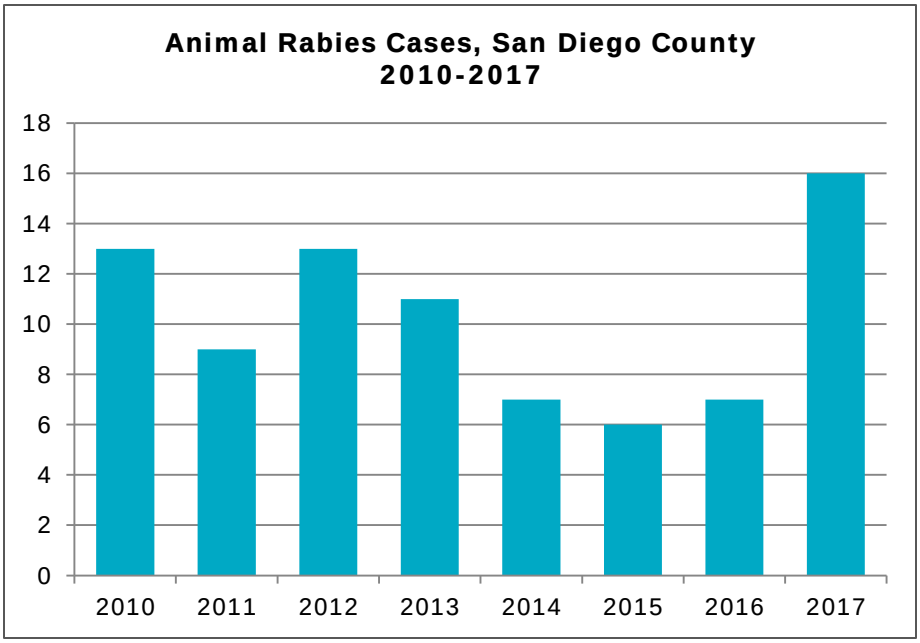
Notes:

1. San Diego County and California counts include confirmed, probable, and suspect cases following the California Department of Public Health case definition. US counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Pertussis first became nationally notifiable in 1973.
3. Pertussis is vaccine-preventable. In the United States, whole-cell pertussis vaccines were first licensed in 1914 and became available in 1948 as the combined DTP vaccine, which provides protection against diphtheria, tetanus, and pertussis. Acellular pertussis vaccines are currently available in combination with tetanus and diphtheria toxoids as DTaP (pediatric formulation) or Tdap (adolescent and adult formulation).
4. CDC recommends vaccination of infants, children, adolescents, and adults. It is recommended that pregnant women receive the Tdap vaccine during each pregnancy between 27-36 weeks of gestation.

RABIES, ANIMAL

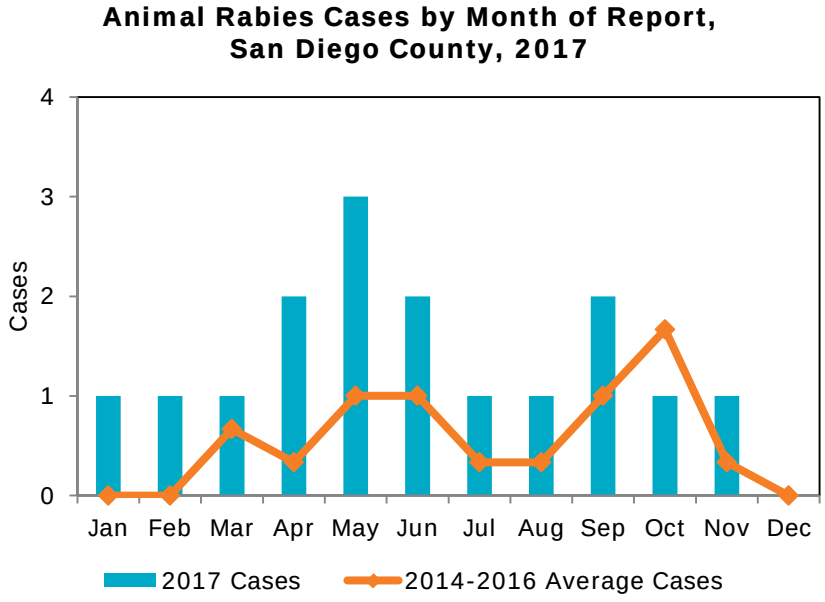
Disease Info

Infectious agent: Rabies virus, a lyssavirus in the family Rhabdoviridae
Incubation: Highly variable, weeks to months in animals; in humans, usually 3-8 weeks, but ranging from a few days to several years
Mode of transmission: Exposure to saliva of a rabid mammal, usually introduced through a bite or scratch
Symptoms: Early signs in animals may include lethargy, fever, anorexia, progressing to abnormal or uncoordinated movement, weakness, paralysis, difficulty swallowing and breathing, hyper-salivation, abnormal or aggressive behavior, followed by death



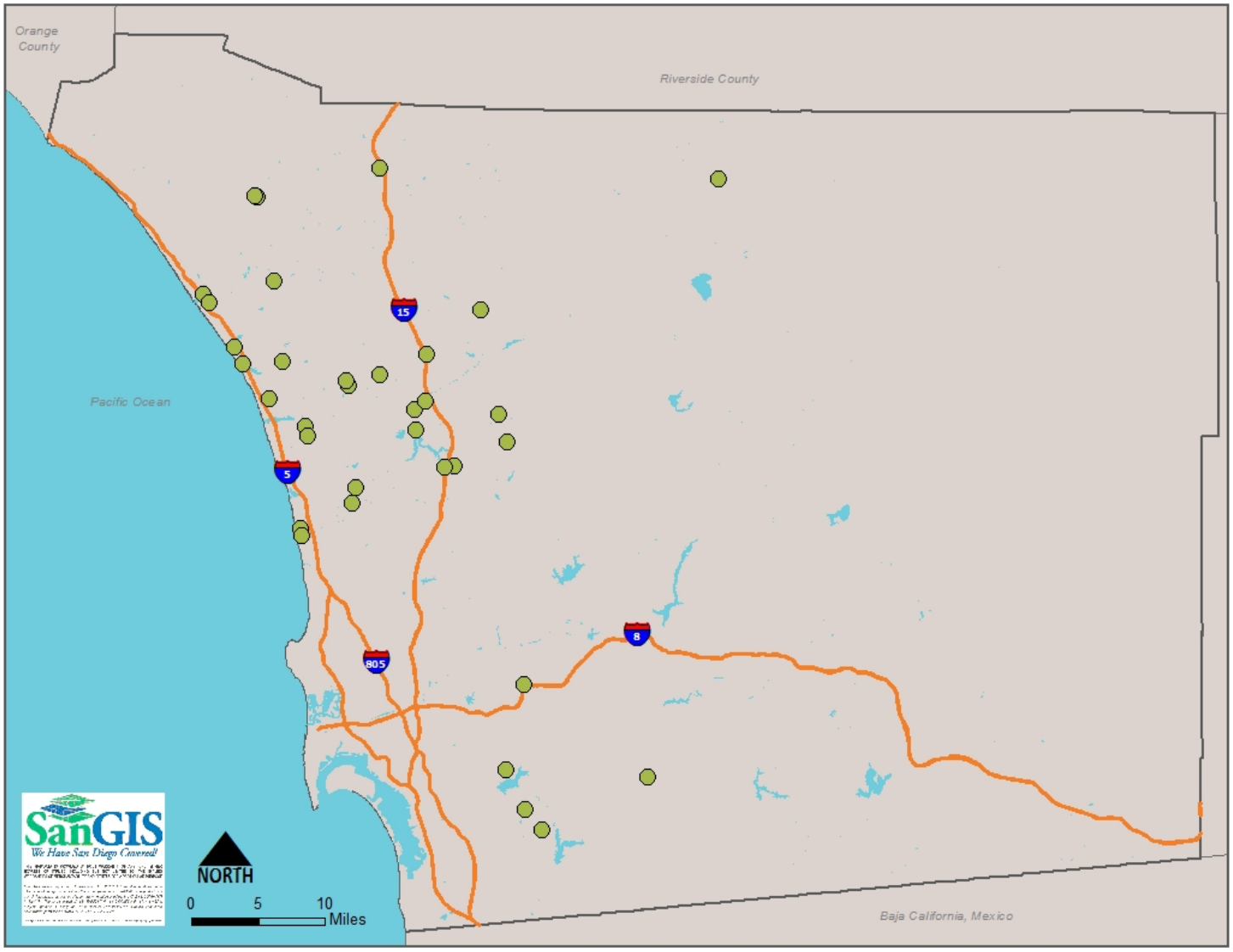
Key Points

- Eighty-two animals tested positive for rabies in San Diego County between 2010 and 2017. Annual counts ranged from six to 16.
- All animals testing positive for rabies were bats, with the exception of a grey fox infected with a bat variant of rabies in 2010.
- A domestic animal (e.g., dog, cat) has not tested positive for rabies in San Diego County for over 40 years. However, San Diego County pets remain at risk for rabies from contact with bats.
- Many of the bats testing positive for rabies in San Diego County are found during the summer and early fall months when bat activity increases and warmer weather and outdoor activities provide opportunities for humans and pets to have contact with wild animals. However, bats can test positive for rabies throughout the year.
- The last human case in San Diego County was in 2001, in a person who sustained a dog bite in the Philippines.
- Rabies-positive bats have been found in many areas of San Diego County.



RABIES, ANIMAL

Bats Testing Positive for Rabies by Location Found, San Diego County, 2013-2017



Notes:

1. Counts include confirmed cases following the CDC/CSTE case criteria.
2. Animal rabies has been nationally notifiable since 1944.
3. Data on animal rabies cases in San Diego County were collected and recorded differently prior to 2010. Thus, those data are not comparable and are not reflected in this summary.
4. Generally, only animals that have come into contact with humans or pets are tested; counts are not reflective of all animal rabies in the county.
5. Eleven positive bats were found at San Diego Zoo Safari Park in Escondido during the 5-year period; they appear as a single dot on the map.

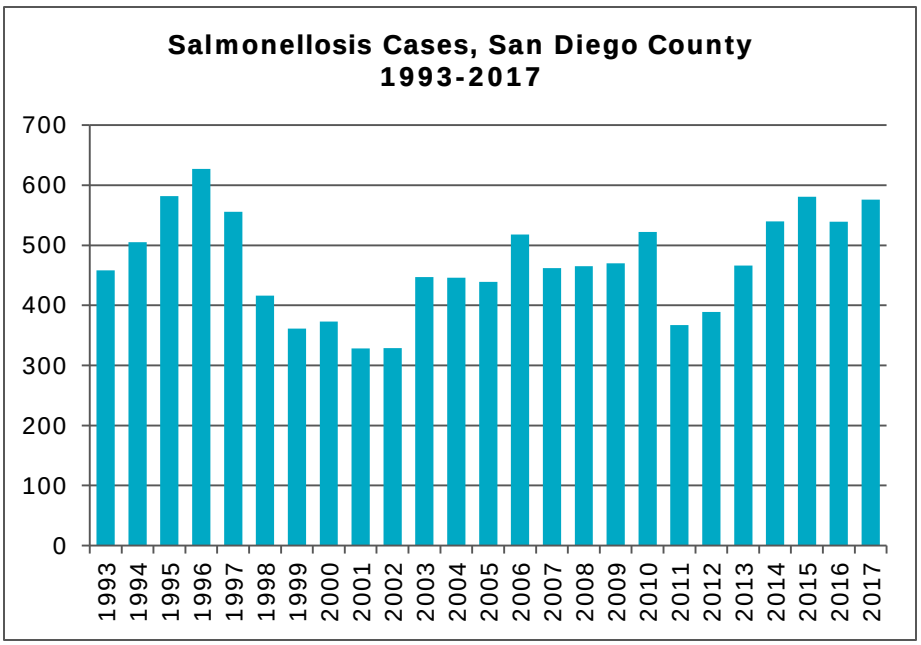
For more information:

- Centers for Disease Control and Prevention (CDC) Rabies website
- Compendium of Animal Rabies Prevention and Control, 2016 (NASPHV)
- Rabies Surveillance in the United States during 2014
- California Department of Public Health (CDPH) Rabies Surveillance and Prevention website
- CDPH California Compendium of Rabies Control and Prevention
- CDC/CSTE Animal Rabies Case Definition
- CDC/CSTE Human Rabies Case Definition
- County of San Diego Rabies website

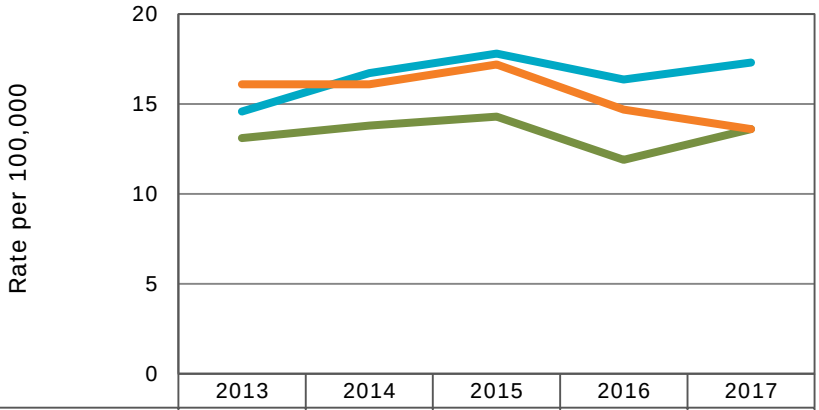
SALMONELLOSIS

Disease Info

Infectious agent: *Salmonella*, non-typhi bacteria
Incubation: Usually 12-36 hours, range 6 hours-7 days
Mode of transmission: Fecal-oral; raw or undercooked eggs; contaminated poultry; cross-contamination; contact with animal, reptiles, or birds; person-to-person (e.g., day care/diapered children/sexual activity)
Symptoms: Acute diarrhea, abdominal cramps, fever, sometimes vomiting



Salmonellosis Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	14.6	16.7	17.8	16.4	17.3
California	13.1	13.8	14.3	11.9	13.6
United States	16.1	16.1	17.2	14.7	13.6

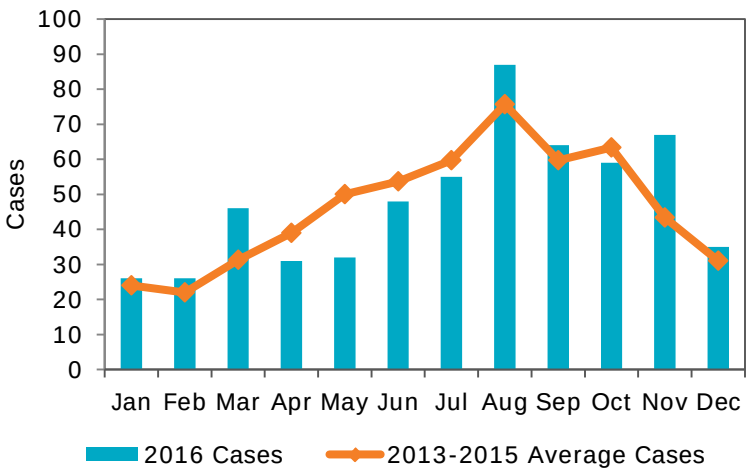
Key Points

- In 2017, there were 576 cases of salmonellosis in San Diego County. This is an increase of seven percent compared to the previous year (539 cases). In 2017, the case definition was changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases.
- The incidence rate of salmonellosis in 2017 was slightly higher in San Diego County (17.3 per 100,000) than in California (13.6 per 100,000) and the United States (13.6 per 100,000).
- In 2017, 23% of salmonellosis case-patients in San Diego County were hospitalized for their infection.
- Onsets of illness peaked during the summer months in 2017. This is consistent with trends seen in previous years.
- The greatest number of cases in 2017 were in persons between the ages of 25-44 years (132 cases), followed by persons aged 45-64 years (127 cases). The highest rates, however, were among children under five years of age (44.8 per 100,000).
- *Salmonella* Enteritidis was the most frequently reported serotype among San Diego County cases.
- Commonly reported risk factors included eating food prepared outside of the home (71%), and consuming fresh fruit (68%), poultry (67%), and eggs (70.9%). Travel was reported by 32% of case-patients.

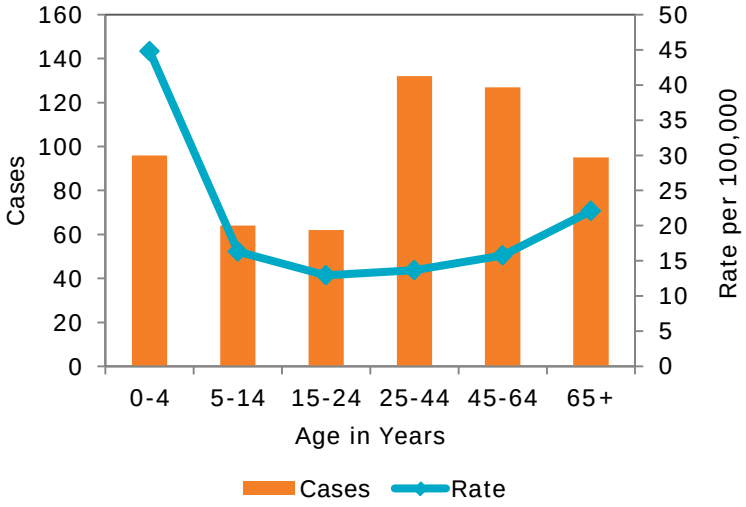
23% HOSPITALIZED 2017

SALMONELLOSIS

Salmonellosis Cases by Month of Onset, San Diego County, 2017



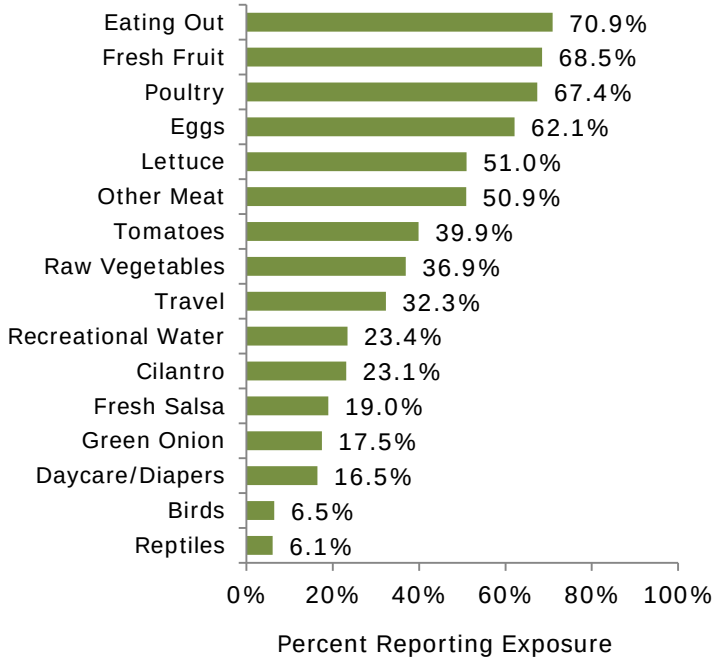
Salmonellosis Cases and Rates by Age, San Diego County, 2017



Reported Salmonella Serotypes, San Diego County, 2017

Serotype	Cases	Percent
Enteritidis	127	22.1
Newport	68	11.8
Typhimurium	26	4.5
Muenchen	25	4.3
Montevideo	20	3.4
Braenderup	17	3.0
Manhattan	16	2.8
Heidelberg	15	2.6
Infantis	13	2.3
I 4,[5],12:i:-	12	2.1
All other serotypes	174	30.2
Unknown	63	10.9
Total	576	100.0

Risk Factors Reported by Salmonellosis Case-Patients, San Diego County, 2017

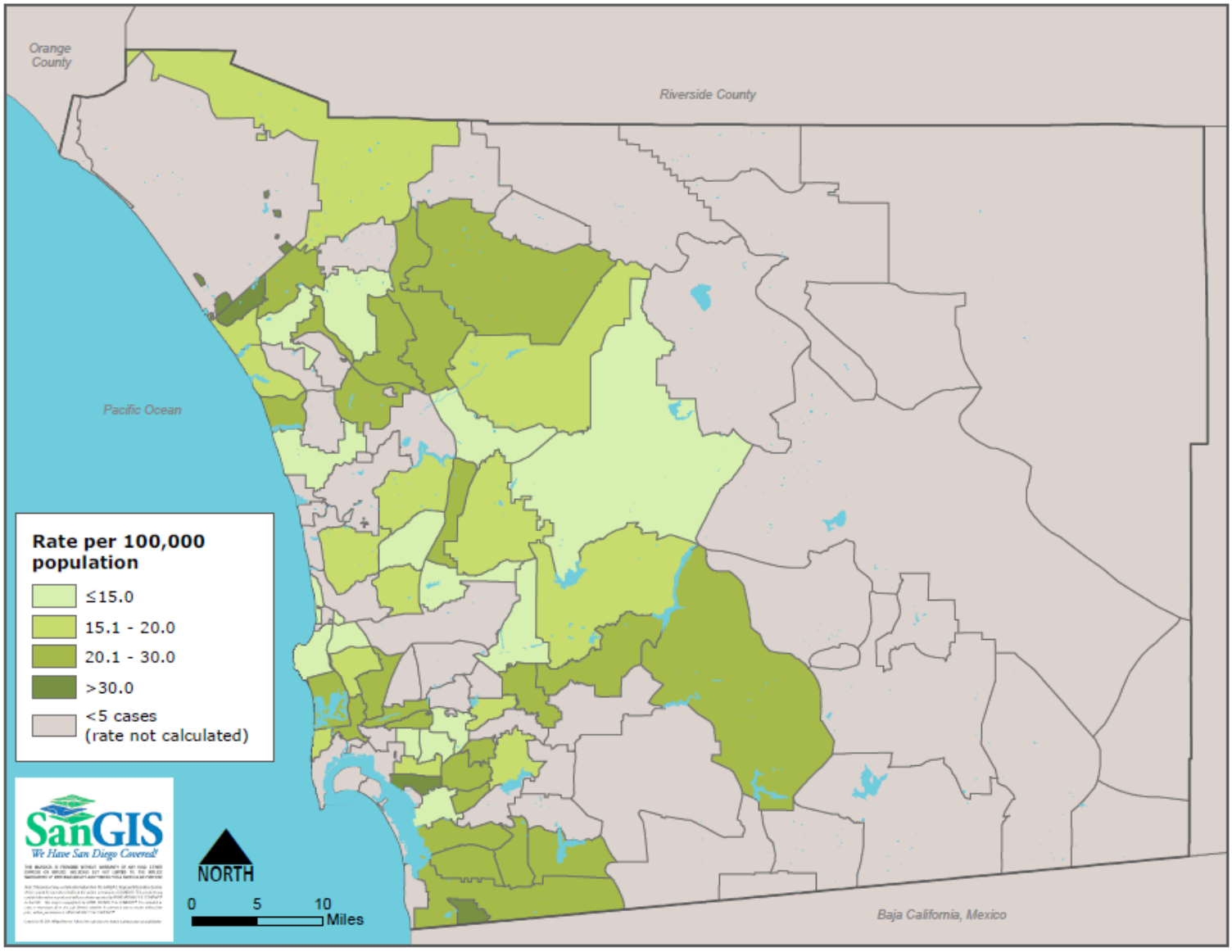


Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria. In 2017, the case definition was changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases. Use of CIDT detection methods is increasing.
2. Salmonellosis became nationally notifiable in 1944.
3. Denominators for hospitalization and risk factor calculations are cases with available information, ranging from 377-474 of 576 total cases.
4. Risk factors are potential sources as reported by case-patients, not confirmed sources of infection.

SALMONELLOSIS

Salmonellosis Rates by Zip Code of Residence, San Diego County, 2017



For more information:

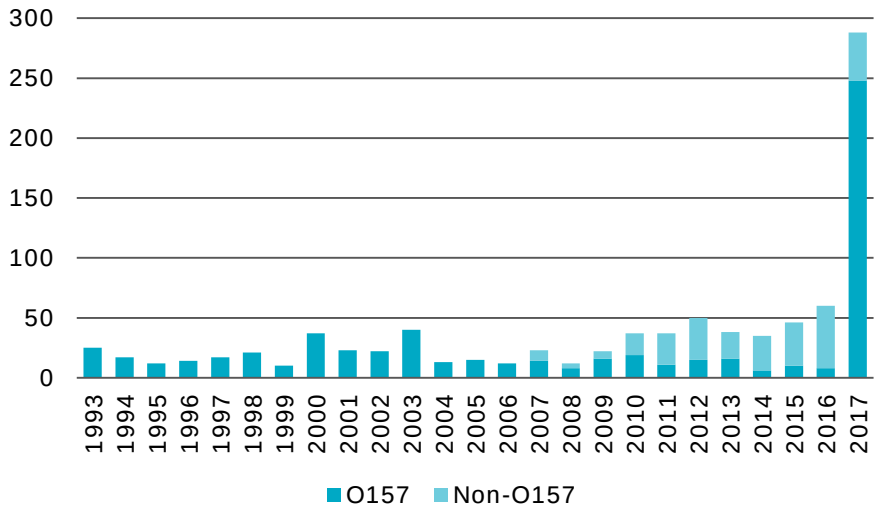
- Centers for Disease Control and Prevention (CDC) Salmonellosis website
- California Department of Public Health (CDPH) Salmonellosis website
- CDC/CSTE Salmonellosis Case Definition

SHIGA TOXIN-PRODUCING *E. COLI*

Disease Info

Infectious agent: Strains of *Escherichia coli* (*E. coli*) bacteria that produce Shiga toxin; *E. coli* O157 is the best known, but many other serogroups (referred to as non-O157 *E. coli*) cause disease
Incubation: Average 3-4 days, range 1-10 days
Mode of transmission: Fecal-oral; food/beverage/water contaminated by ruminant feces (often ground beef, sprouts, leafy greens, unpasteurized milk products); contact with ruminants; person-to-person in households, child care settings
Symptoms: Acute diarrhea, often bloody; abdominal cramps; sometimes vomiting and low-grade fever

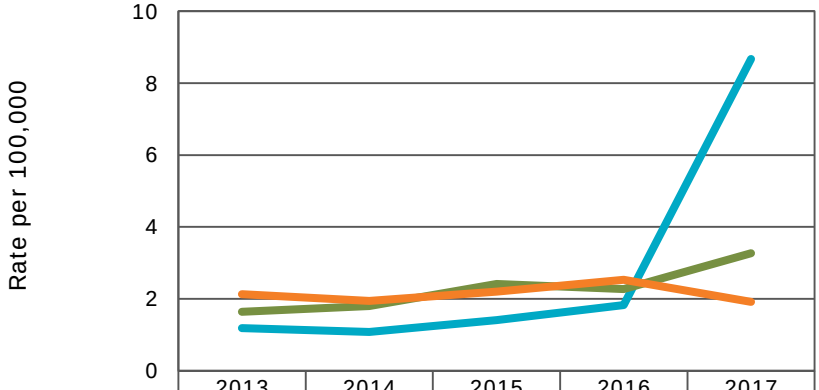
Shiga Toxin-Producing *E. coli* Cases, San Diego County, 1993-2017



Key Points

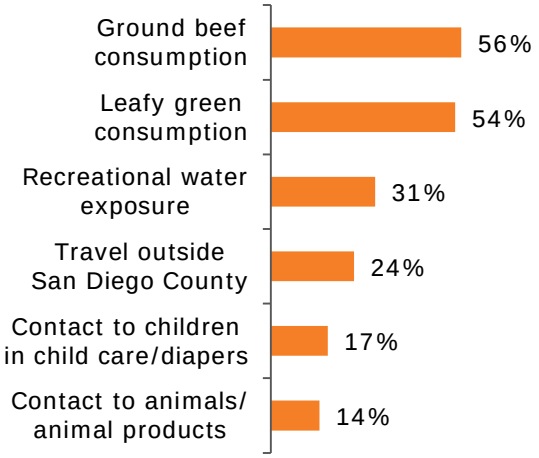
- In 2017, there were 288 cases of Shiga toxin-producing *E. coli* (STEC) in San Diego County. The majority of these cases (242) were associated with a large outbreak of *E. coli* O157 at the Marine Corps Recruit Depot (MCRD).
- There were three non-outbreak and 14 outbreak-associated cases of post-STEC hemolytic uremic syndrome.
- Excluding outbreak cases, 28% of STEC cases in 2017 were serogroup O157. Other common serogroups were O26 and O103.
- Incidence of reported STEC in San Diego County had been lower than in California and the United States in recent years, but due to the outbreak, increased dramatically to 8.8 cases per 100,000 population in 2017.
- Excluding outbreak case-patients, among whom the mean age was 18 years, both counts and rates of STEC in San Diego County were highest among children under five years old.
- Consumption of ground beef (56%) and leafy greens (54%) were the most common exposures reported by non-outbreak cases in 2017.

Shiga Toxin-Producing *E. coli* Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	1.2	1.1	1.4	1.8	8.7
California	1.6	1.8	2.4	2.3	3.3
United States	2.1	1.9	2.2	2.5	1.9

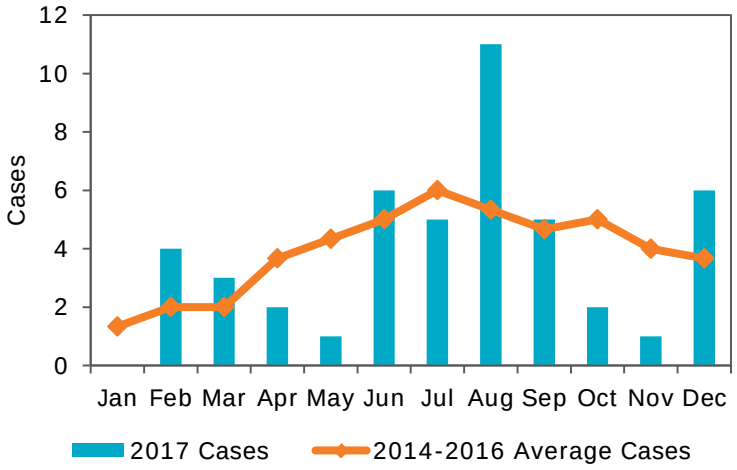
Risk Factors Reported by Case-patients, Shiga Toxin-producing *E. coli*, San Diego County, 2017*



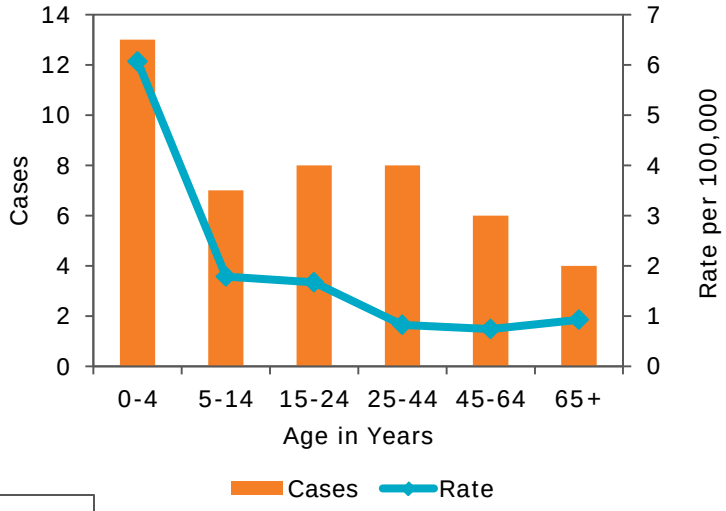
*N=46, excludes MCRD outbreak cases

SHIGA TOXIN-PRODUCING *E. COLI*

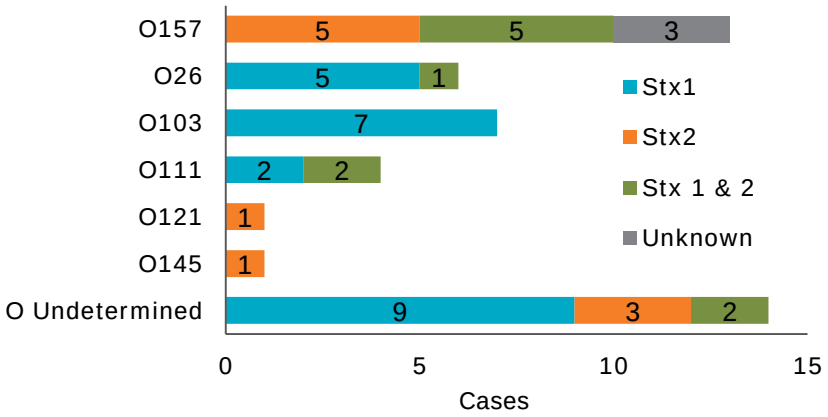
Shiga Toxin-Producing *E. coli* Cases by Month of Onset, San Diego County, 2017*



Shiga Toxin-Producing *E. coli* Cases and Rates by Age, San Diego County, 2017*



Shiga Toxin-Producing *E. coli* Serogroups by Shiga Toxin (Stx) Type, San Diego County, 2017*



37% EMERGENCY DEPARTMENT VISIT

28% HOSPITALIZED

2017*

3 CASES OF HEMOLYTIC UREMIC SYNDROME

For more information:

- Centers for Disease Control and Prevention (CDC) *E. coli* website
- CDC/CSTE Shiga toxin-Producing *E. coli* Case Definition
- California Department of Public Health (CDPH) *E. coli* O157 website
- U. S. Department of Agriculture Food Safety and Inspection Service *E. coli* website

***N=46 for charts on this page, excludes MCRD outbreak cases**

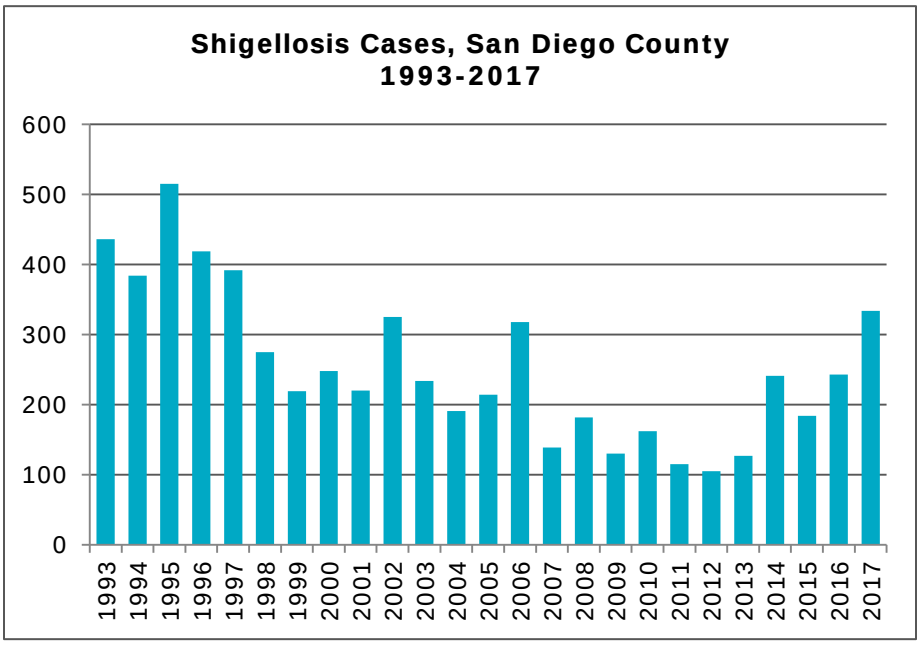
Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. *E. coli* O157 has been nationally notifiable since 1995. Non-O157 Shiga toxin-producing *E. coli* became reportable as Enterohemorrhagic *E. coli* (EHEC) in 2001 and as Shiga toxin-producing *E. coli* (STEC) in 2006.
3. Shiga toxin only (detected in feces), where Shiga toxin is detected but Shiga toxin-producing *E. coli* bacteria are not isolated, is also reportable in California. In San Diego County, there were 35 Shiga toxin only cases in 2017 (data not included in this summary).
4. Shiga toxin specimens and potential STEC isolates from San Diego County cases are sent to the California Department of Public Health Microbial Diseases Laboratory for confirmation and serogroup and Shiga toxin identification. One probable case and two cases reported to San Diego County from other states are missing Shiga toxin information.
5. Denominators for clinical/risk factor calculations are cases with available information, ranging from 34-43 of 46 non-outbreak cases.
6. Risk factors are potential exposures mentioned by case-patients, not confirmed sources of infection.
7. There was a large outbreak of *E. coli* O157 among recruits at the Marine Corp Recruit Depot San Diego in late 2017, including 242 cases of STEC and 14 cases of hemolytic uremic syndrome. These cases are included in the overall count and incidence for 2017, but are excluded from the other analyses because of the size and specific nature of this outbreak (denoted by an asterisk*) .

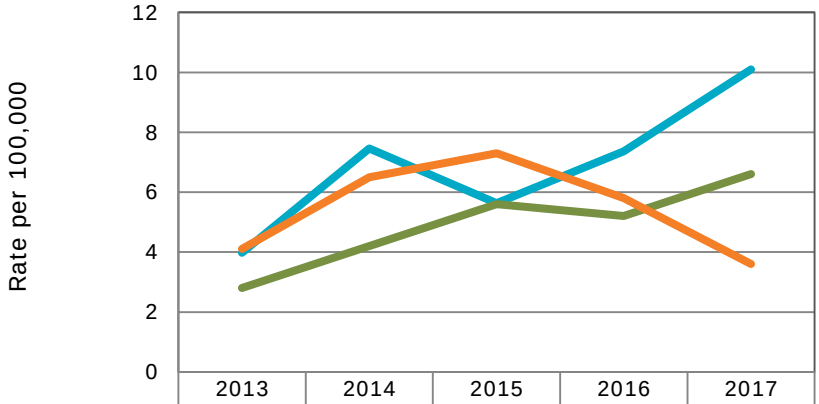
SHIGELLOSIS

Disease Info

Infectious agent: Four species, or serogroups, of *Shigella* bacteria: *S. dysenteriae* (Group A), *S. flexneri* (Group B), *S. boydii* (Group C), and *S. sonnei* (Group D)
Incubation: Usually 1-3 days, range 12 hours-4 days
Mode of transmission: Fecal-oral; ingestion of contaminated food or water; person-to-person (e.g., day care/diapered children/sexual activity)
Symptoms: Diarrhea (often bloody), abdominal cramps, and fever



Shigellosis Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	4.0	7.5	5.6	7.4	10.1
California	2.8	4.2	5.6	5.2	6.6
United States	4.1	6.5	7.3	5.8	3.6

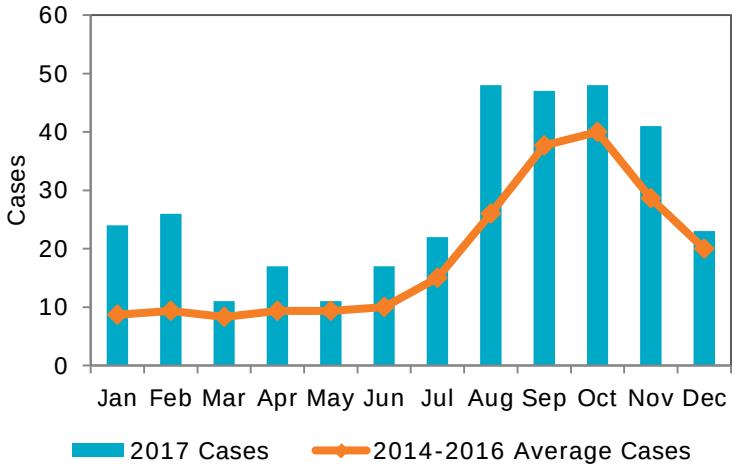
Key Points

- In 2017, there were 334 cases of shigellosis in San Diego County. This is an increase of 37% compared to the previous year (243 cases). In 2017, the case definition was changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases.
- The incidence rate of shigellosis in 2017 was higher in San Diego County (10.1 per 100,000) than in California (6.6 per 100,000) and the United States (3.6 per 100,000).
- Similar to prior years, cases of shigellosis increased through the end of the summer months and declined after October.
- The greatest number of cases (120) and the highest incidence rate (14.9 per 100,000) were among persons 45-64 years of age.
- Commonly reported risk factors included eating food prepared outside of the home (71%), and consuming raw vegetables (46%), fresh fruit (64%), and cheese (40%). Travel was reported by 37% of case-patients.
- In San Diego County, the most frequently reported species was *S. sonnei* (44%), followed by *S. flexneri* (25%).
- Incidence rates were highest among residents of the Central HHSA Region of San Diego County.

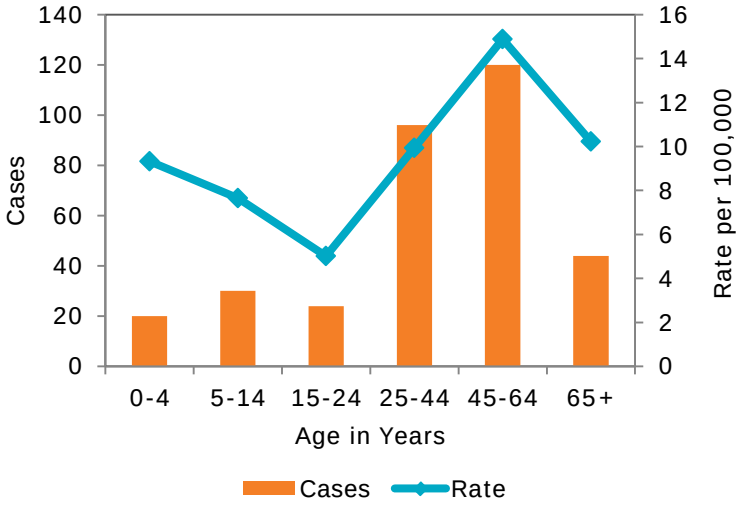
3D computer-generated image of a number of rod-shaped, drug-resistant *Shigella* bacteria.
Photo credit: CDC/ James Archer, Public Health Image Library

SHIGELLOSIS

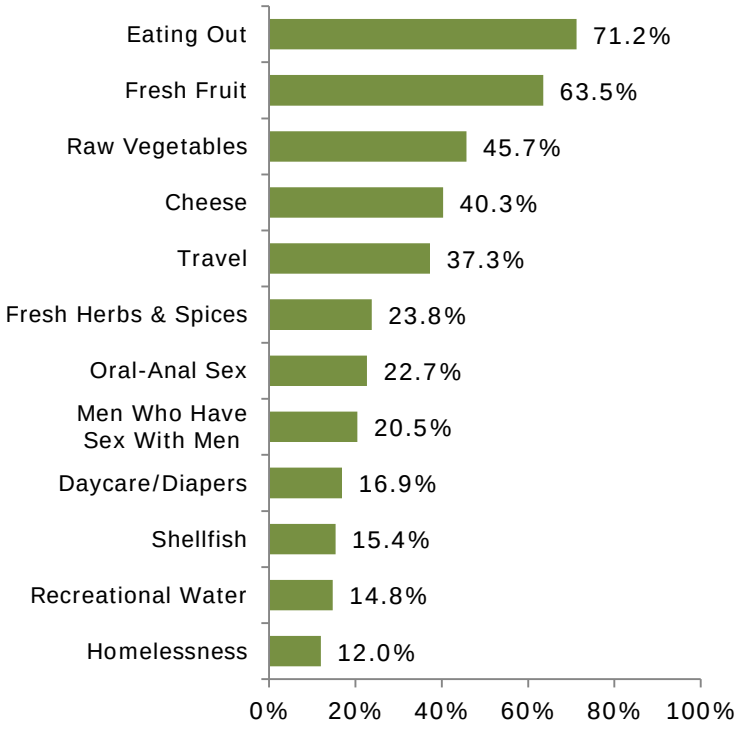
Shigellosis Cases by Month of Onset, San Diego County, 2017



Shigellosis Cases and Rates by Age, San Diego County, 2017



Risk Factors Reported by Shigellosis Cases, San Diego County, 2017



Reported Shigella Species (Serogroups), San Diego County, 2017

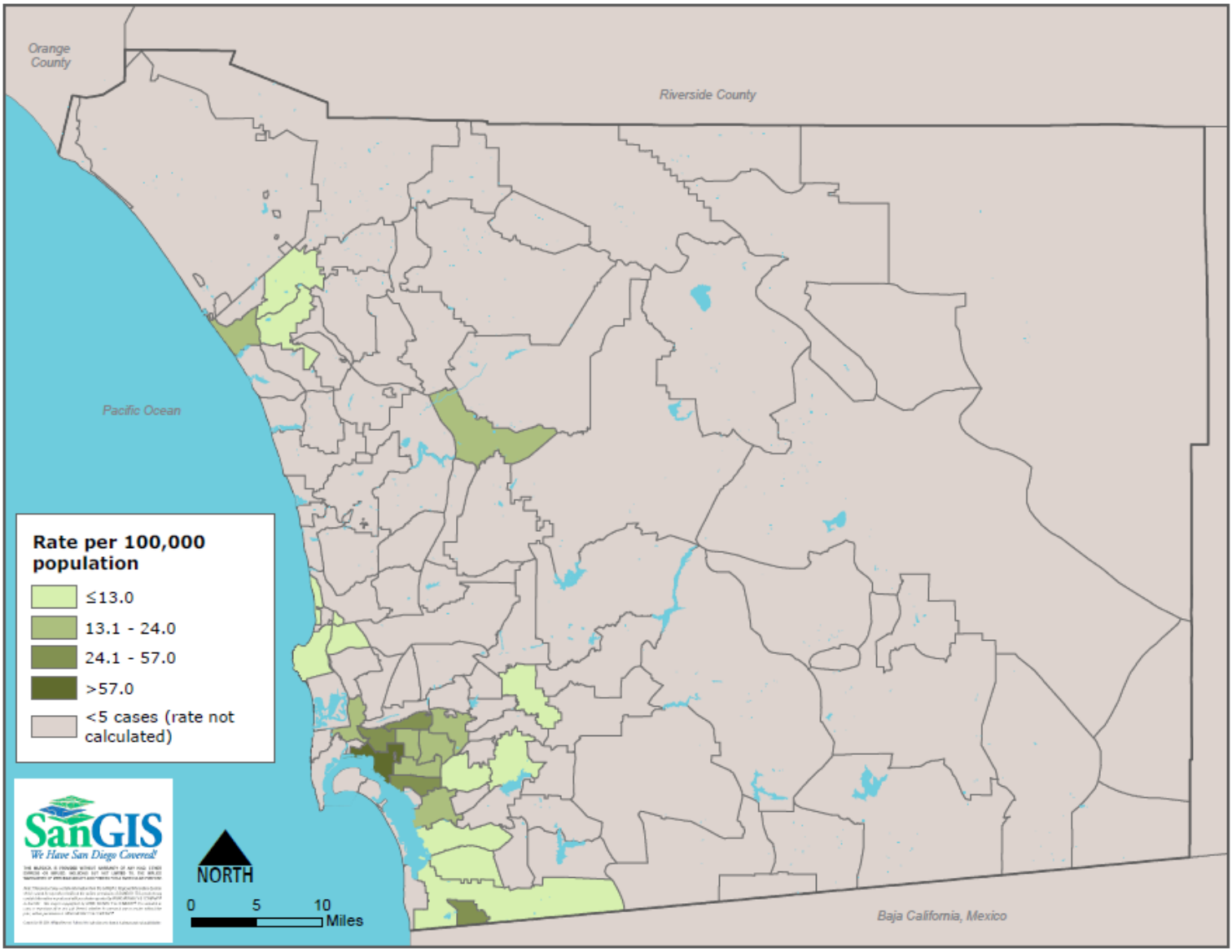
Species	Cases	Percent
S. sonnei (D)	147	44.0
S. flexneri (B)	84	25.2
S. boydii (C)	4	1.2
S. dysenteriae (A)	3	0.9
Unspecified	96	28.7
Total	334	100.0

Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria. In 2017, the case definition was changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases. Use of CIDT detection methods is increasing.
2. Shigellosis became nationally reportable in 1944.
3. Denominators for risk factor calculations are cases with available information, ranging from 141-241 of 334 total cases.
4. Risk factors are potential sources as reported by case-patients, not confirmed sources of infection.

SHIGELLOSIS

**Shigellosis Rates by Zip Code of Residence,
San Diego County, 2017**



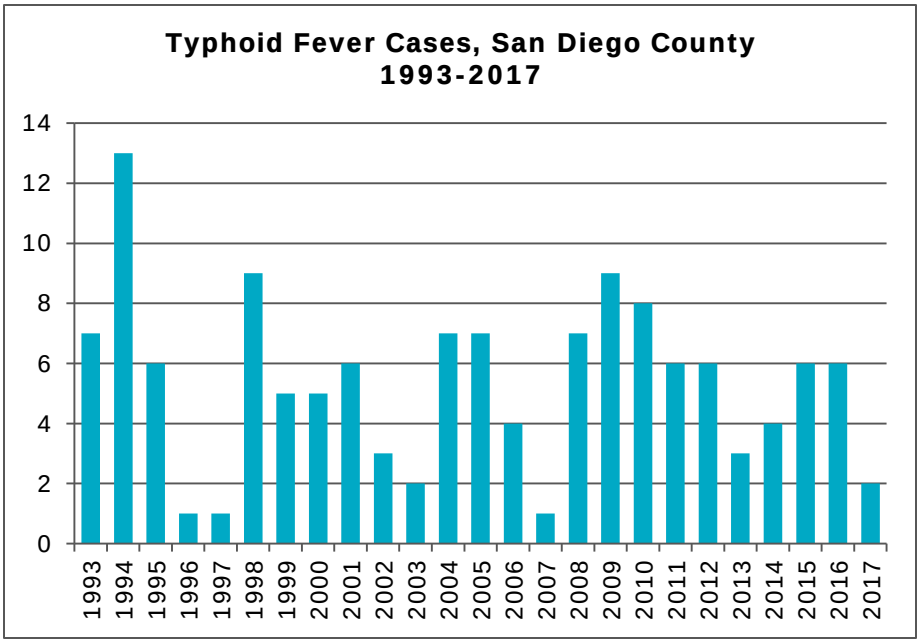
For more information:

- Centers for Disease Control and Prevention (CDC) Shigellosis website
- California Department of Public Health (CDPH) Shigellosis website
- CDC/CSTE Shigellosis Case Definition

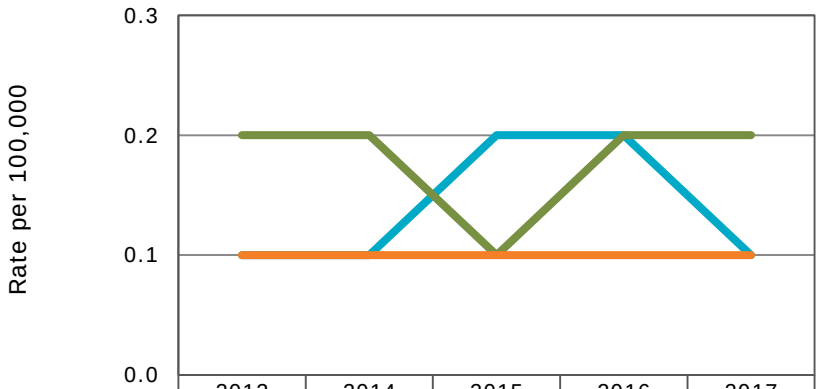
TYPHOID FEVER

Disease Info

Infectious agent: *Salmonella enterica* serotype Typhi, a bacterium
Incubation: Usually 8-14 days, range 3-30 days
Mode of transmission: Person-to-person through contact with an infected person's feces or urine; contaminated food or drink
Symptoms: High fever (103° or 104° F), stomach pain, headache, fatigue, loss of appetite; sometimes a rash of flat, rose-colored spots



Typhoid Fever Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.1	0.1	0.2	0.2	0.1
California	0.2	0.2	0.1	0.2	0.2
United States	0.1	0.1	0.1	0.1	0.1

Key Points

- In 2017, there were two cases of typhoid fever in San Diego County.
- The incidence rate of typhoid fever in San Diego County has remained low. In 2017, the rate in San Diego County was 0.1 per 100,000 population. This rate is similar to the rate for California (0.2 per 100,000) and the United States (0.1 per 100,000) in 2017.
- Both case-patients traveled internationally prior to the onset of their illnesses (Mexico and India).

3D computer-generated image of a number of *Salmonella* serotype Typhi bacteria.
Photo credit: CDC/ James Archer, Public Health Image Library

Notes:

1. Counts include confirmed and probable cases with acute illness following the CDC/CSTE case criteria. Chronic carriers are not included.
2. Typhoid fever first became nationally notifiable in 1944.

For more information:

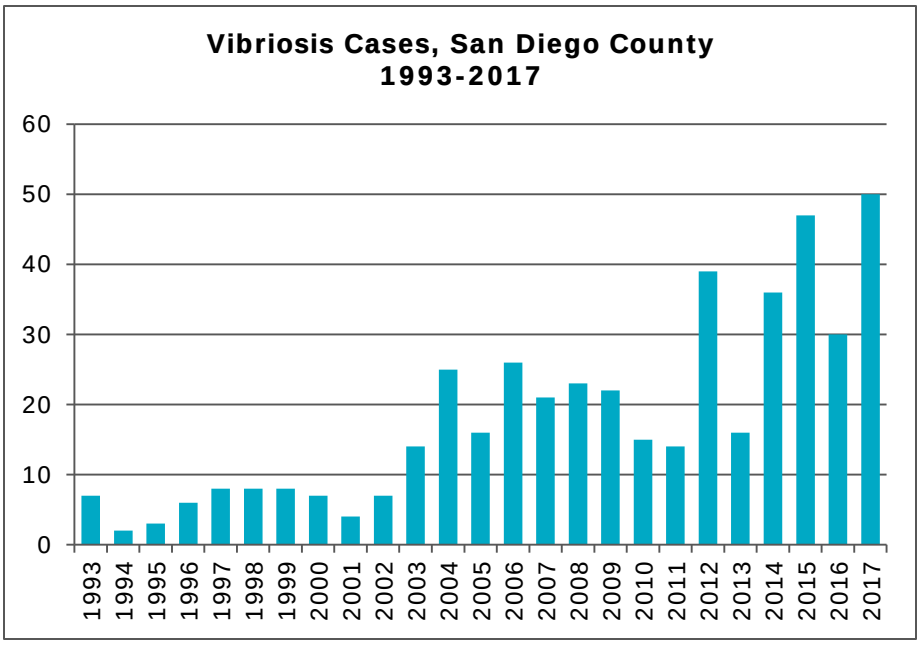
- Centers for Disease Control and Prevention (CDC) Typhoid Fever website
- California Department of Public Health (CDPH) Typhoid Fever website
- CDC/CSTE Typhoid Fever Case Definition
- CDC Health Information for International Travel (the Yellow Book) – Typhoid & Paratyphoid Fever

VIBRIOSIS

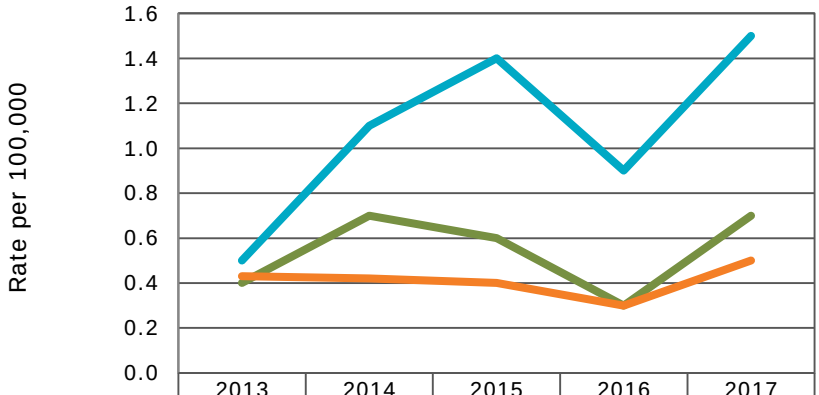
Disease Info

Infectious agent: Numerous bacteria in the Vibrionaceae family, including *V. parahaemolyticus, V. alginolyticus,* nontoxigenic *V. cholerae*, *V. vulnificus, Grimontia spp.*, *Photobacterium spp*.
Incubation: Usually 10-72 hours
Mode of transmission: Ingestion of raw or undercooked seafood, especially shellfish; skin infection by exposure of wounds to brackish or salt water
Symptoms: Watery diarrhea, abdominal cramps, nausea, vomiting, fever; septicemia; skin infection; ear infection; can be asymptomatic

Vibriosis Cases, San Diego County 1993-2017



Vibriosis Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.5	1.1	1.4	0.9	1.5
California	0.4	0.7	0.6	0.3	0.7
United States	0.4	0.4	0.4	0.3	0.5

Key Points

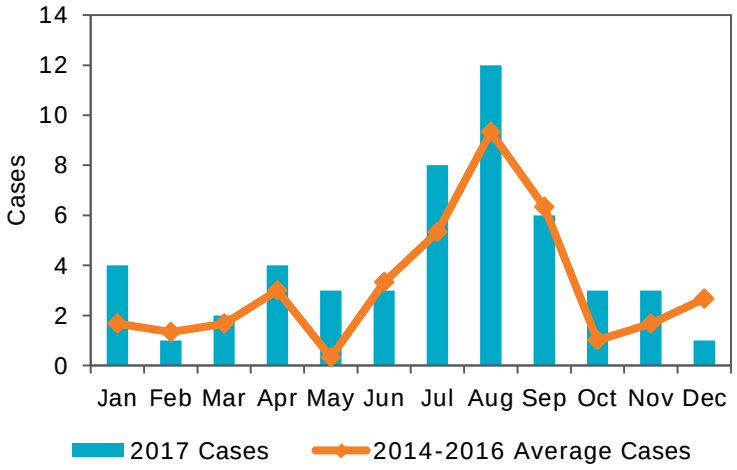
- In 2017, there were 50 cases of vibriosis in San Diego County. This is an increase of 67% compared to the previous year (30 cases). The case definition was changed in 2017 to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases.
- In San Diego County, the incidence rate of vibriosis in 2017 was 1.5 per 100,000 population. In recent years, the incident rate has been higher in San Diego County than in California and the United States.
- As in previous years, cases of vibriosis peaked in the summer months in 2017.
- The largest number of cases were among persons aged 45-64 years, followed by persons aged 25-44 years. Incidence rates were highest among those aged 65 years and older (2.8 per 100,000).
- In San Diego County, the most frequently reported species were *Vibrio parahaemolyticus* (32%) and *Vibrio alginolyticus* (24%).
- The majority of cases were in the non-Hispanic population (66%). These cases were infected with *Vibrio* species associated with both ingestion and wound/ear transmission.

Notes:

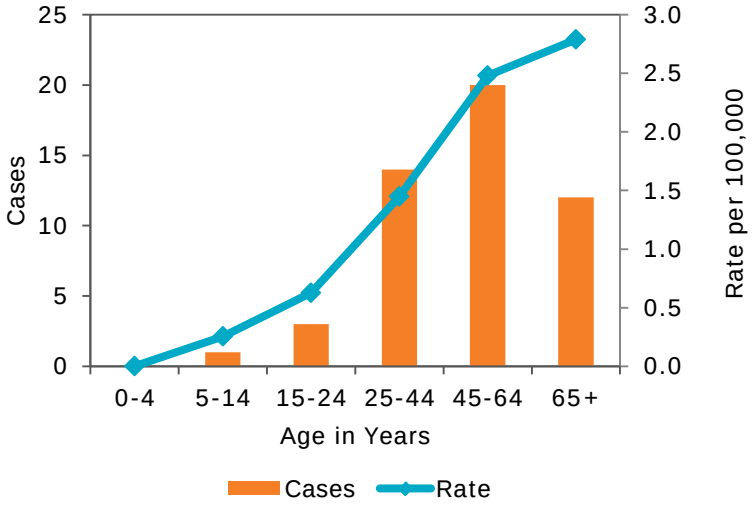
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria. Vibriosis does not include infections with toxigenic *Vibrio cholerae* O1 and O139, which are reportable as cholera.
2. In 2017, the case definition changed to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases. In previous years, these cases were not included in the case counts. Use of CIDT detection methods is increasing.
3. Vibriosis became a nationally notifiable condition in 2007.

VIBRIOSIS

Vibriosis Cases by Month of Onset, San Diego County, 2017



Vibriosis Cases and Rates by Age, San Diego County, 2017

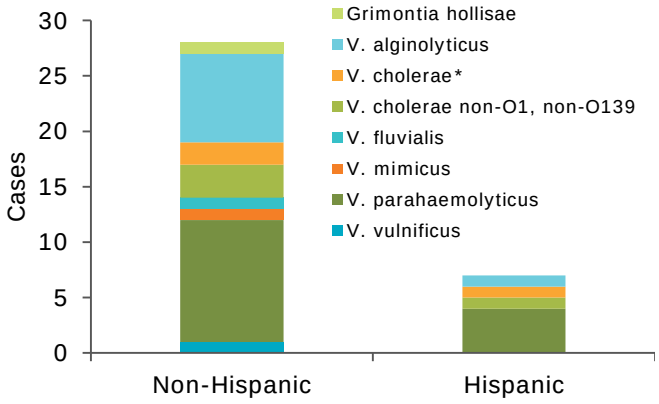


Reported *Vibrio* Species, San Diego County, 2017

Species	Cases	Percent
V. parahaemolyticus	16	32
V. alginolyticus	12	24
*V. cholerae**	4	8
V. cholerae non-O1, non-O139	4	8
Grimontia hollisae	1	2
V. fluvialis	1	2
V. mimicus	1	2
V. vulnificus	1	2
Unspecified	10	20
Total	50	100

*Cases classified as vibriosis rather than cholera due to negative result for toxin gene or toxigenic testing not performed.

Vibriosis Cases by Species and Ethnicity, San Diego County, 2017



Types of Transmission and Presentation Typically Associated with Commonly Reported *Vibrio* Species in San Diego County**

Species	Transmission		Clinical Presentation		
	Ingestion	Wound /Ear	Gastro-enteritis	Wound/Ear Infection	Septicemia
V. parahaemolyticus	●●	○	●●	●	○
V. alginolyticus		●●		●●	
V. vulnificus	●	●	●	●●	●●
V. cholerae non-O1/ non-O139	●●	●	●●	●	●

●● most common ● potential ○ very rare

**Adapted from Chapter 5.8 "Noncholera" Vibrio Species, Table 8 Clinical Syndromes Due to Vibrio Species (p. 124) in AS Evans & PS Brachman (Eds.) *Bacterial Infections of Humans: Epidemiology and Control* (3rd edition, 1998); New York: Plenum Medical Book Company.

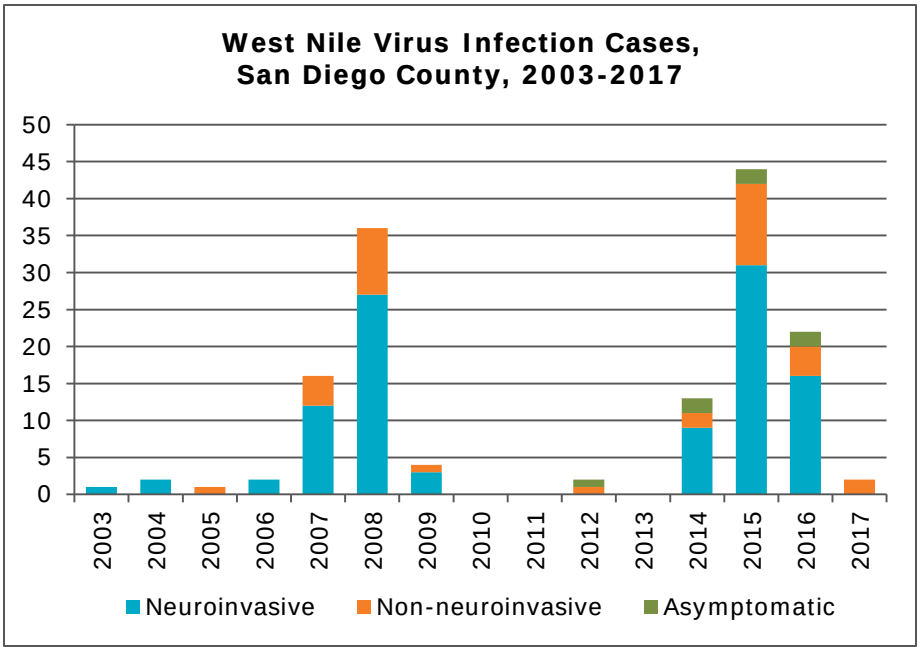
For more information:

- Centers for Disease Control and Prevention (CDC) Vibriosis website
- California Department of Public Health (CDPH) Vibriosis website
- CDC/CSTE Vibriosis Case Definition

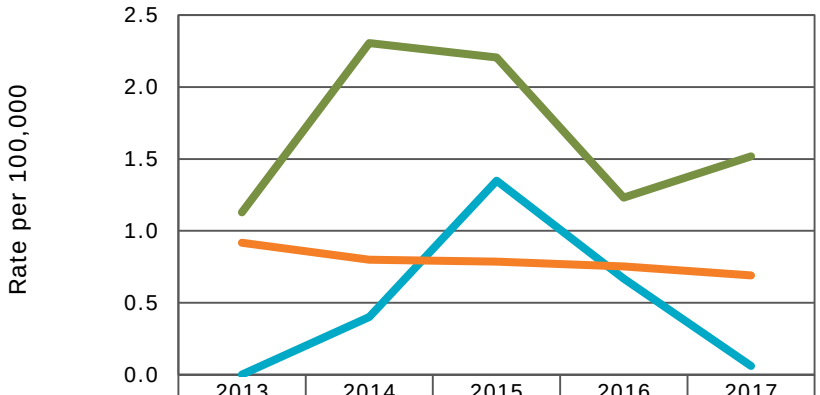
WEST NILE VIRUS INFECTION

Disease Info

Infectious agent: West Nile virus, a flavivirus
Incubation: Usually 2-6 days, range 2-14 days
Mode of transmission: Bite of infected mosquitoes, primarily *Culex* mosquitoes
Symptoms: Frequently asymptomatic (70-80%); West Nile fever (20%), causing fever, headache, body aches, joint pain; neuroinvasive disease (<1%), such as meningitis, encephalitis, or acute flaccid paralysis, characterized by headache, high fever, stiff neck, disorientation, seizures



West Nile Virus Infection Incidence, San Diego County, California, and United States, 2013-2017



	2013	2014	2015	2016	2017
San Diego County	0.0	0.4	1.3	0.7	0.1
California	1.1	2.3	2.2	1.2	1.5
United States	0.9	0.8	0.8	0.8	0.7

Key Points

- There were two cases of West Nile virus infection among San Diego County residents reported in 2017.
- Both cases presented as non-neuroinvasive disease and neither was hospitalized. Illness onsets were in July and September.
- Incidence of West Nile virus infection in California is down from a peak in 2014-2015, but remains higher than incidence in the United States. San Diego County incidence decreased from 1.3 per 100,000 population in 2015 to 0.1 per 100,000 in 2017.
- In 2017, both San Diego County cases were in adults aged 45-64 years.
- West Nile virus infections are frequently locally-acquired in San Diego County. Both case-patients in 2017 had potential exposures both in San Diego County and elsewhere.

For more information:

- Centers for Disease Control and Prevention (CDC) West Nile Virus website
- CDC/CSTE West Nile Virus Disease Case Definition
- California West Nile Virus website
- County of San Diego (COSD) West Nile Virus website
- COSD Department of Environmental Health Fight the Bite! website

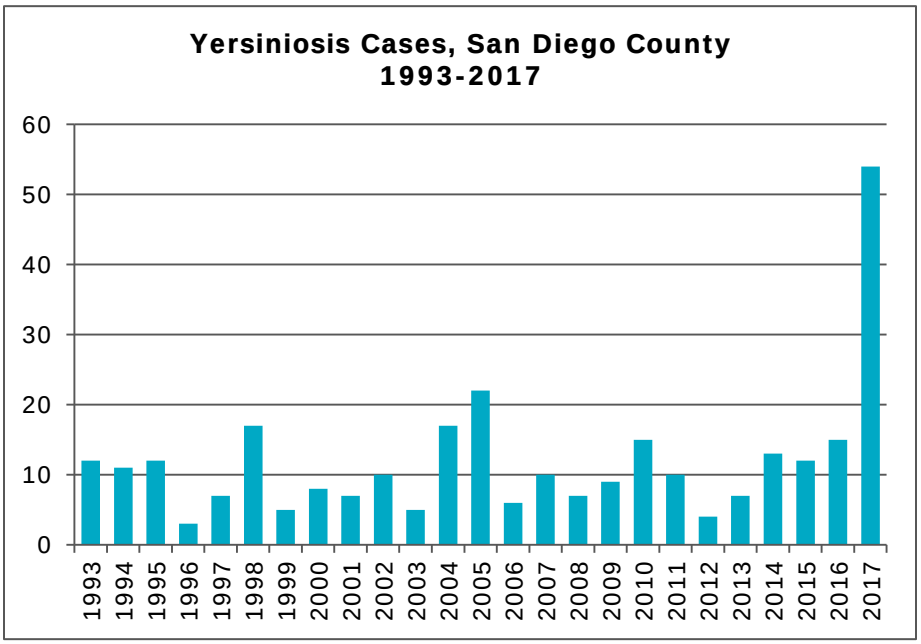
Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria, as well as asymptomatic cases detected during screening of blood donors.
2. West Nile virus encephalitis/meningitis has been nationally notifiable since 2002 as part of arboviral disease reporting. West Nile virus disease has been nationally notifiable as part of Arboviral Diseases, Neuroinvasive and Non-neuroinvasive since 2005.
3. True incidence of West Nile virus infection is likely much higher. Symptomatic, and especially severe, cases are more likely to be reported.

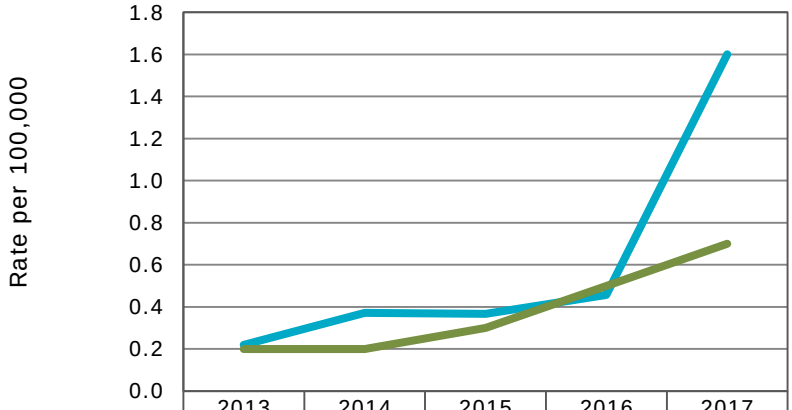
YERSINIOSIS

Disease Info

Infectious agent: *Yersinia enterocolitica*, a bacterium
Incubation: Range 4-7 days
Mode of transmission: Consumption of contaminated food, especially raw or undercooked pork products; cross-contamination; drinking contaminated unpasteurized milk or untreated water; contact with infected animals or their feces; person-to-person (e.g., handling of diapers)
Symptoms: Fever, abdominal pain, diarrhea, pain on the right side of the abdomen



Yersiniosis Incidence, San Diego County and California, 2013-2017

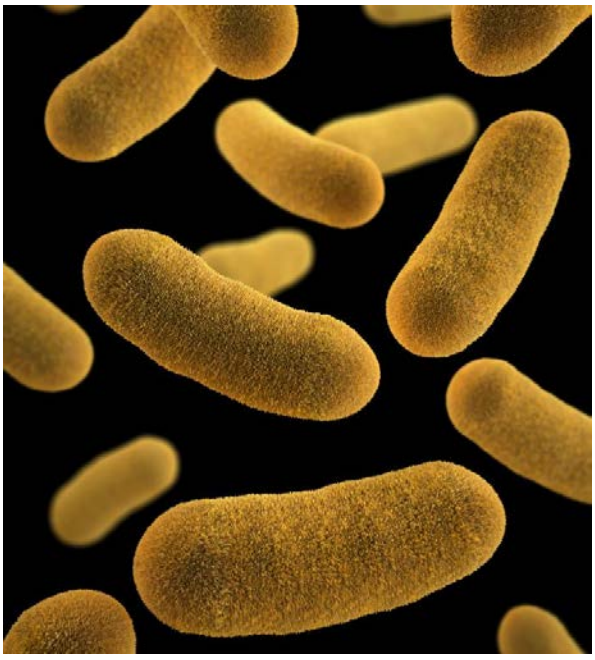


	2013	2014	2015	2016	2017
San Diego County	0.2	0.4	0.4	0.5	1.6
California	0.2	0.2	0.3	0.5	0.7

US incidence data are not available. Yersiniosis is not nationally reportable.

Key Points

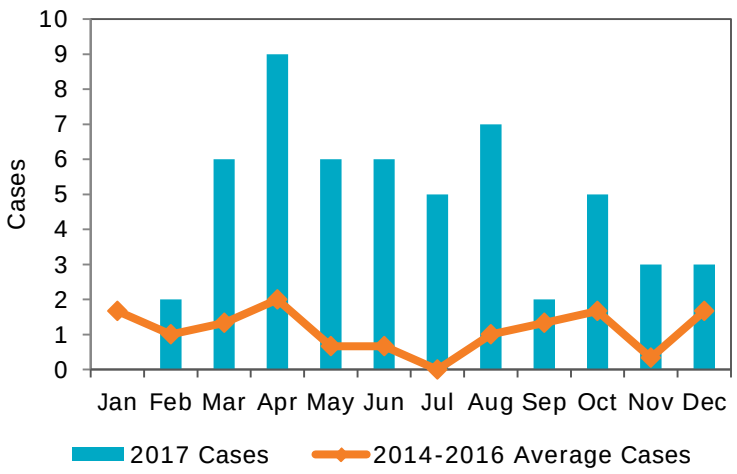
- In 2017, there were 54 cases of yersiniosis in San Diego County. The number of cases is more than three times the case count in 2016. This increase in cases is due to a change in the case definition. Beginning in 2017, cases detected by culture-independent diagnostic testing (CIDT) are included as probable cases.
- The incidence rate of yersiniosis in San Diego County (1.6 per 100,000) was higher than the rate for California (0.7 per 100,000) in 2017.
- In 2017, most case-patients had an onset of disease in the spring and summer months.
- In San Diego County, case counts were higher among adults. Incidence rates were highest among persons aged 65 years and older.



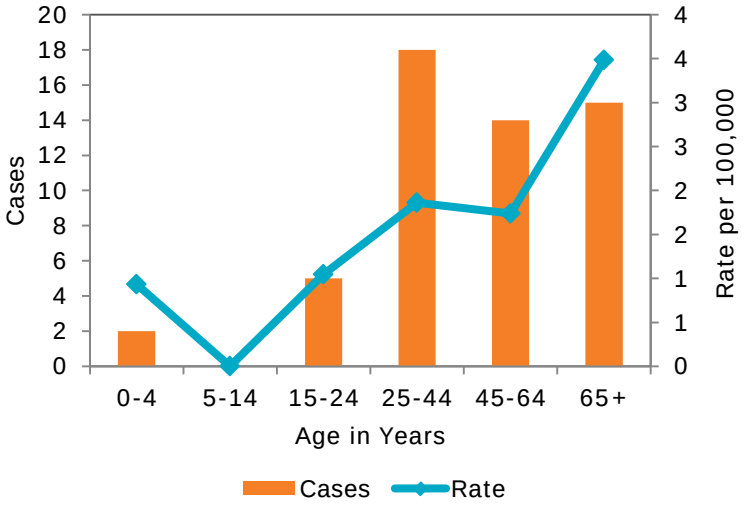
This illustration depicts a three-dimensional (3D) computer-generated image of a number of oblong-shaped, Yersinia enterocolitica bacteria. The artistic recreation was based upon scanning electron microscopic (SEM) imagery.
Photo credit: CDC/ James Archer, Jennifer Oosthuizen, Public Health Image Library

YERSINIOSIS

Yersiniosis Cases by Month of Onset, San Diego County, 2017



Yersiniosis Cases and Rates by Age, San Diego County, 2017



Notes:

1. Counts include confirmed and probable cases following local case criteria.
2. Yersiniosis is not a nationally notifiable condition. Yersiniosis became reportable in California in 1996.
3. The case definition for yersiniosis changed in 2017 to include cases detected by culture-independent diagnostic testing (CIDT) as probable cases. In previous years, these cases were not included in the case counts. Use of CIDT detection methods is increasing.

For more information:

- Centers for Disease Control and Prevention (CDC) Yersiniosis website

ZIKA VIRUS INFECTION

Disease Info

Infectious agent: Zika virus, a member of the family Flaviviridae
Incubation: Usually 3-7 days, range 2-12 days
Mode of transmission: Primarily transmitted through the bite of an infected *Aedes aegypti* or *Aedes albopictus* mosquito; person-to-person through sex with an infected person, perinatal (mother-to-child) transmission, and by blood transfusion
Symptoms: Fever, rash, headache, joint pain, conjunctivitis, muscle pain; often asymptomatic. Zika virus infection during pregnancy can lead to pregnancy loss, microcephaly, other severe fetal brain defects, eye defects, hearing loss, and impaired growth in infants.

Zika Incidence, San Diego County, California, and United States, 2016-2017

	2016		2017	
	Case Count	Incidence Rate	Case Count	Incidence Rate
San Diego County	83	2.5	21	0.6
California	394	1.0	127	0.3
United States	4,757	1.5	444	0.1

San Diego County Zika Cases, 2017

62% SYMPTOMATIC

14% VISITED EMERGENCY ROOM

19% HOSPITALIZED

Key Points

- In 2017, there were 21 cases of Zika virus infection in San Diego County residents. This is a decrease of 75% compared to the previous year (83 cases).
- The incidence rate of Zika virus infection was higher in San Diego County (0.6 per 100,000) than in California (0.3 per 100,000) and the United States (0.1 per 100,000).
- In San Diego County, the majority (62%) of cases reported were symptomatic. Asymptomatic cases are less likely to be detected.
- In 2017, 14% of case-patients visited an emergency department for their illness; 19% of case-patients were hospitalized.
- There was no distinct seasonality in the onset of illness of Zika case-patients.
- In San Diego County, Zika case counts were highest among persons ages 25-44 years (10 cases).
- In 2017, seven cases of Zika virus infection were among pregnant women.
- Three cases (14%) were among infants with congenital exposure to the virus.
- The remaining 18 cases (86%) can be attributed to travel outside of the United States. The most commonly reported international travel location was Mexico (61%) followed by Asia and the South Pacific (28%).

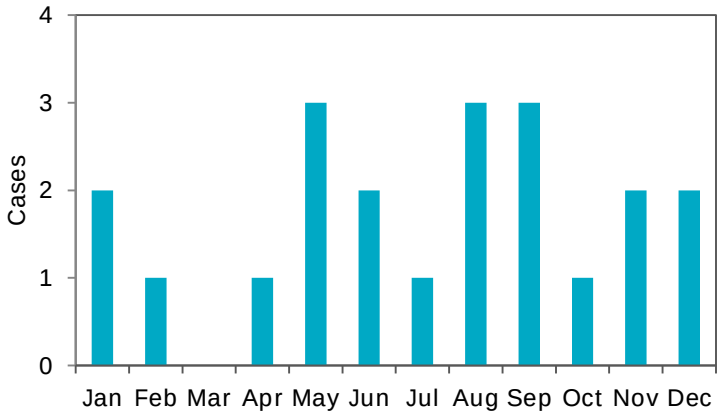
For more information:

- Centers for Disease Control and Prevention (CDC) Zika Virus website
- CDC Zika Virus and Pregnancy website
- CDC Zika Travel Information
- California Department of Public Health (CDPH) Zika website
- CDPH Aedes Aegypti and Aedes Albopictus Mosquitos website
- CDC/CSTE Zika Virus Disease and Zika Virus Infection Case Definition
- County of San Diego Zika Virus website
- County of San Diego Fight the Bite! Website

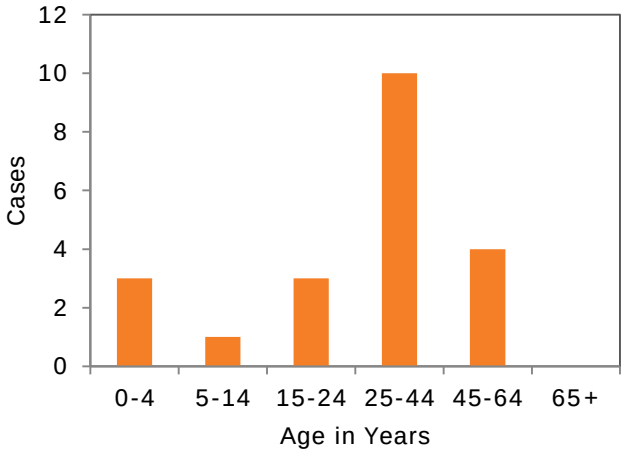
Female *Aedes albopictus* mosquito feeding on a human host. Photo credit: CDC/James Gatheny, Public Health Image Library

ZIKA VIRUS INFECTION

Zika Cases by Month of Onset, San Diego County, 2017



Zika Cases by Age, San Diego County, 2017



7 PREGNANT FEMALES

58% of female cases were pregnant

86% REPORTED TRAVEL OUTSIDE OF THE U.S.

14% CONGENITAL EXPOSURE

Travel Locations Reported By Zika Case-Patients and Sex Partners, San Diego County, 2017

Location	Cases	Percent
Asia/South Pacific	5	27.8
Caribbean	1	5.6
Central America	2	11.1
Mexico	11	61.1

Notes:

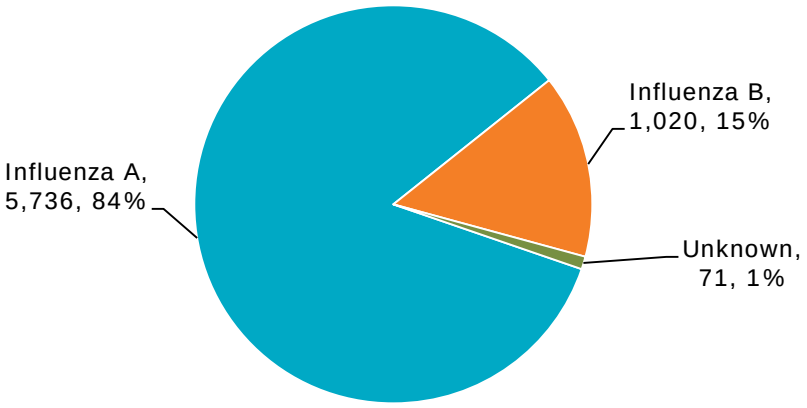
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Zika virus infections became nationally notifiable in 2016.
3. Travel locations add to more than 100% due to one case-patient reporting travel to multiple locations during the exposure period. Congenital cases not included in denominator.
4. Travel to the U.S. Virgin Islands and Puerto Rico is included in counts for travel to the Caribbean.

INFLUENZA SEASON SUMMARY, 2016-17

Disease Info

Infectious agent: Influenza viruses; the two main types causing seasonal epidemics are A and B. Influenza A viruses can be separated into subtypes based on the proteins on the surface of the virus; the influenza A subtypes currently circulating are H1N1 and H3N2. Influenza B viruses are divided into lineages; the lineages currently circulating are Yamagata and Victoria.
Incubation: Typically 1-4 days, with an average of 2 days
Mode of transmission: Large-particle respiratory droplets, spread through close contact or contact with contaminated surfaces
Symptoms: Fever, cough, sore throat, nasal congestion, muscle pain, headache, malaise; young children and the elderly may have atypical presentations (e.g., diarrhea or no fever)

Influenza Detections by Type, San Diego County, Fiscal Year 2016-17 N=6,827



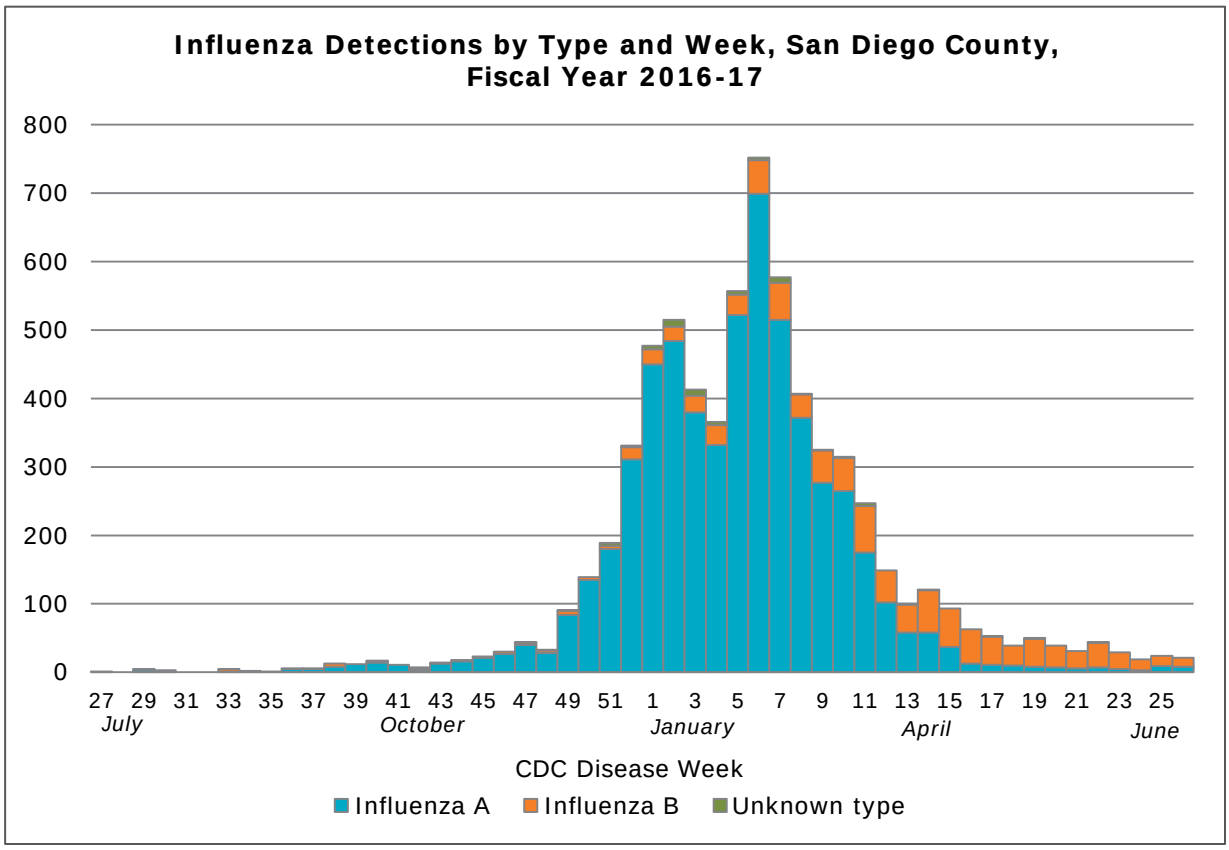
Subtypes of Influenza Detections, San Diego County, Fiscal Year 2016-17

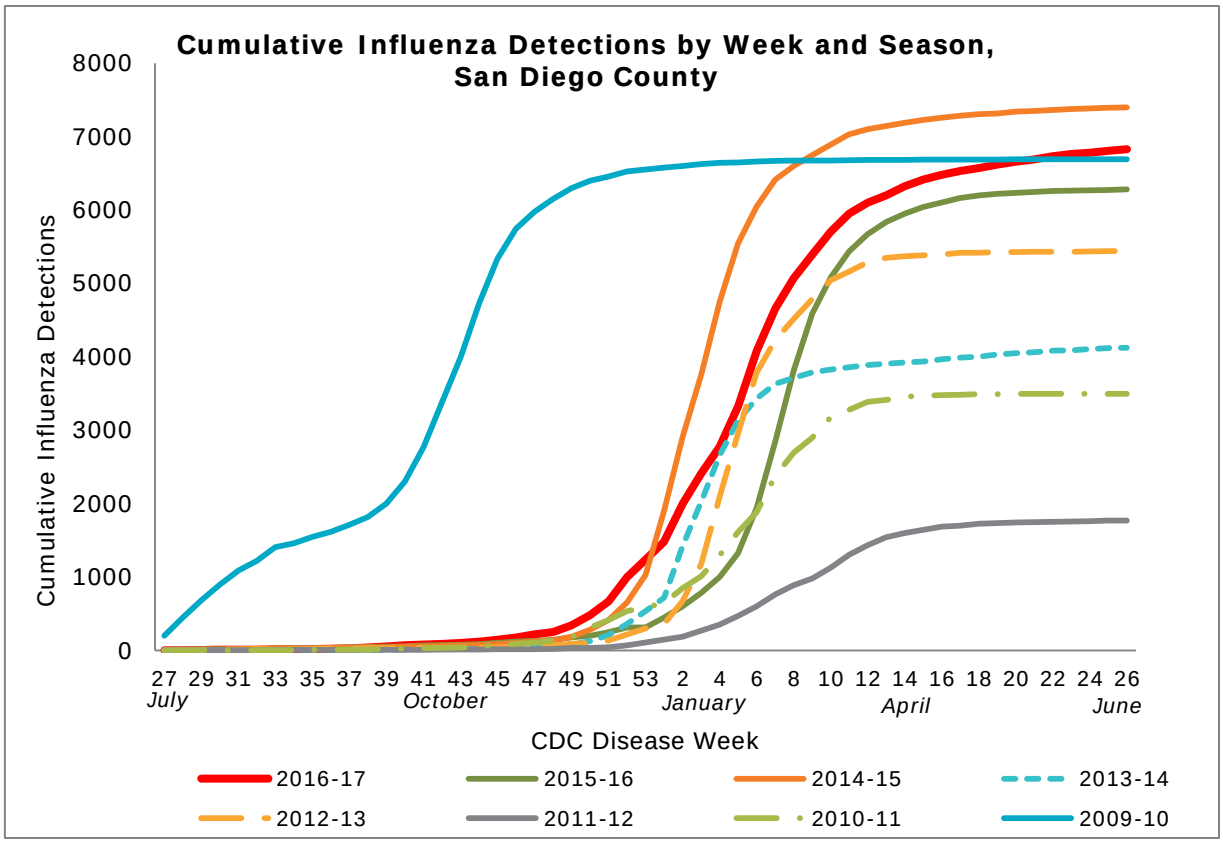
	Detections	Percent
Influenza A		
Total Detections	5,736	100.0
Subtyped	513	8.9
Among those subtyped		
H3N2	488	95.1
H1N1pdm09	25	4.9
Influenza B		
Total Detections	1,020	100.0
Subtyped	7	0.7
Among those subtyped		
Yamagata	5	71.4
Victoria	2	28.6

Key Points

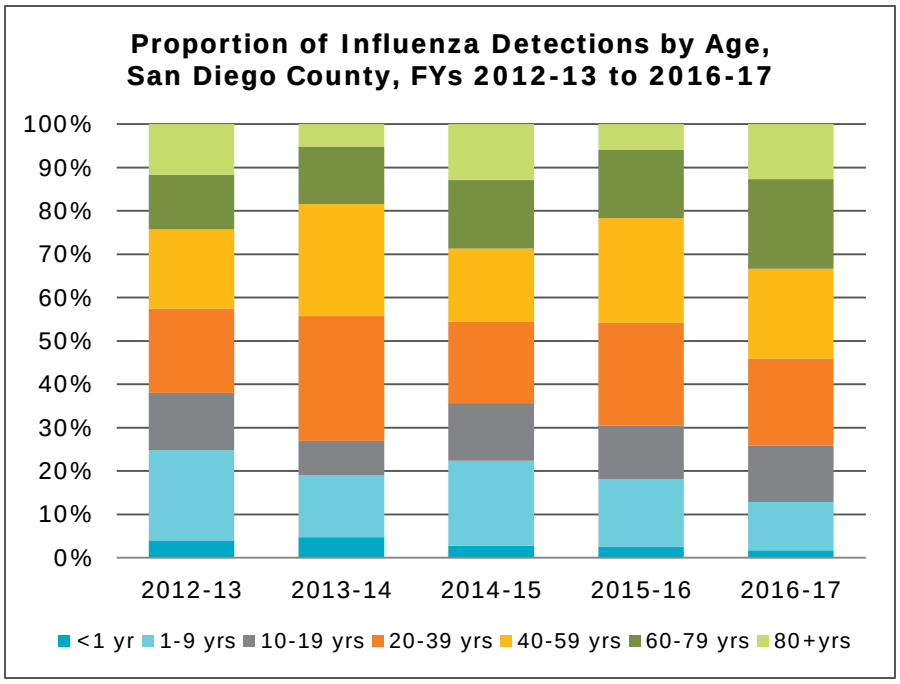
- There were 6,827 influenza cases reported in San Diego County during the 2016-17 season (fiscal year 2016-17). This was the second highest cumulative count in the past eight seasons.
- Over 80% of the detections were influenza A, while only 15% were influenza B. A small percentage of influenza detections were not typed.
- Among the influenza A virus detections that were subtyped (9%), 95% were H3N2.
- Of the influenza B virus detections that were subtyped (only seven), 71% were of the Yamagata lineage.
- The 2016-17 influenza season in San Diego County had an initial peak in early January, followed by a slight decline, then a second, higher peak in early to mid February.
- As expected in a season in which H3N2 was the predominant strain of influenza A, there was a higher proportion of reported infections in persons in older age groups; 33% of reported influenza detections in 2016-17 were in those 60 years old and older, compared to 22% in this age group in 2015-16 when H1N1 predominated.
- Persons aged 65 and older are at higher risk for influenza complications; 83% of the influenza deaths in San Diego County in 2016-17 were among persons 65 years old or older.
- There were 107 influenza-related cases requiring intensive care and 87 influenza-related deaths during the 2016-17 season in San Diego County.
- Twenty percent of the persons who died from influenza-related illness had received the seasonal influenza vaccine and 95% had underlying medical conditions. There were two pediatric deaths.

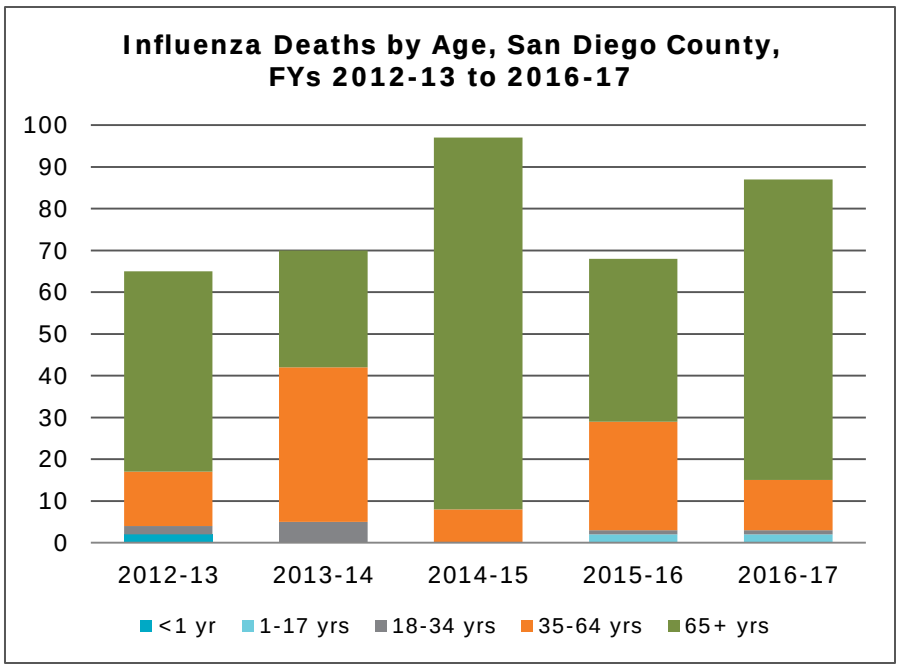
INFLUENZA SEASON SUMMARY, 2016-17





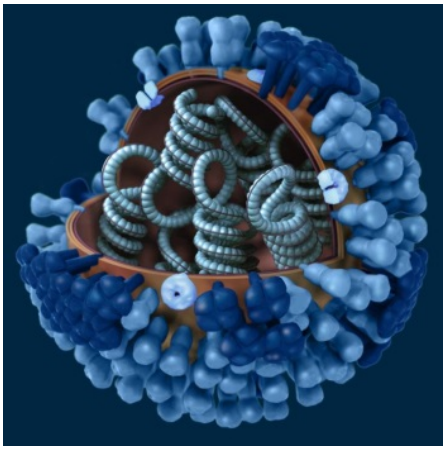
INFLUENZA SEASON SUMMARY, 2016-17





For more information:

- Centers for Disease Control and Prevention (CDC) Influenza website
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book) – Influenza
- CDC Flu Activity and Surveillance website
- CDC Influenza Vaccination website
- California Department of Public Health (CDPH) Influenza (Flu) website
- County of San Diego Influenza website



3D graphical representation of a generic Influenza virion's ultrastructure, with a portion of the virion's outer protein coat cut away
Illustrator: Dan Higgins, CDC Public Health Image Library

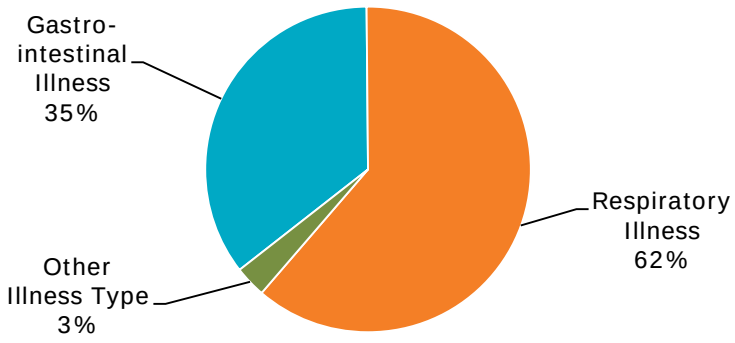
Notes:

1. Influenza is not a legally reportable condition in California except in cases of death in persons under age 65, outbreaks, and detections of novel strains of influenza. However, County of San Diego Public Health Services has requested that local providers and laboratories also report all laboratory-confirmed cases (using any type of appropriate laboratory test, including rapid diagnostic tests) and all influenza-related deaths and ICU-admissions, regardless of age.
2. Cases/detections reported here are incidents of disease, not persons. One person may have more than one type of influenza during a season or multiple infections across seasons; each infection is counted as a case.
3. Influenza data are presented using fiscal years (the County fiscal year is July-June) rather than calendar years because this convention better illustrates the seasonal nature of influenza.
4. Influenza is vaccine-preventable. Inactivated vaccines have been available since the 1940s. The vaccine does not provide long-lasting immunity and efficacy varies by season; vaccination is recommended each season for all persons >6 months of age.

OUTBREAKS, 2017

192 Outbreaks Investigated San Diego County 2017

Outbreaks by Clinical Syndrome, San Diego County, 2017



Outbreaks by Clinical Syndrome and Etiology, San Diego County, 2017

Outbreak Etiology	Outbreaks
Gastrointestinal Illness (n=68)	
Norovirus	41
Gastroenteritis (undetermined etiology)	19
Rotavirus	2
Salmonellosis	2
Bacillus cereus and *Staphylococcus aureus*	1
Cryptosporidiosis	1
Sapovirus	1
Shiga toxin-producing *E. coli*	1
Respiratory Illness (n=118)	
Influenza	113
Respiratory Illness (undetermined etiology)	4
Respiratory Syncytial Virus	1
Other Illness Type (n=6)	
Chickenpox	1
Conjunctivitis (unknown etiology)	1
Mumps	1
Scombroid Fish Poisoning	1
Strep Throat	1
Viral meningitis	1

Key Points

- The Epidemiology and Immunization Services Branch investigated 192 outbreaks in 2017.
- In the majority (62%) of the outbreaks, the ill experienced respiratory symptoms. Almost all (96%) of these outbreaks were caused by influenza. Most (82) of the influenza outbreaks were in December, early in the 2017-18 season.
- In 35% of the outbreaks, the ill experienced gastrointestinal (GI) symptoms. The most common etiology was norovirus (60%). Etiology was undetermined for 19 of 68 GI outbreaks.
- The remaining six outbreaks had diverse symptoms and etiologies, including two vaccine-preventable infections (chickenpox, mumps), one viral meningitis outbreak, and one outbreak caused by fish poisoning.
- Twenty-six outbreaks (14%) were attributed to foodborne transmission. Etiologies included norovirus (10), salmonellosis (1), *E. coli* O157 (1), scombroid fish poisoning (1), sapovirus (1), and *Bacillus cereus*/ *Staphylococcus aureus* (1). In 11 outbreaks, the etiology was unknown.

Notes:

1. Criteria for determining the occurrence of an outbreak and criteria for confirming outbreak etiology vary by disease. See the sections on norovirus and influenza outbreaks for disease-specific outbreak criteria.
2. Outbreaks of any disease are reportable by law to the local public health department.
3. Outbreak counts include those investigated by the Epidemiology and Immunization Services Branch and do not represent all outbreaks in San Diego County.
4. A large community outbreak of hepatitis A in San Diego County began in late 2016 and continued through 2017; that outbreak is not included in this summary.

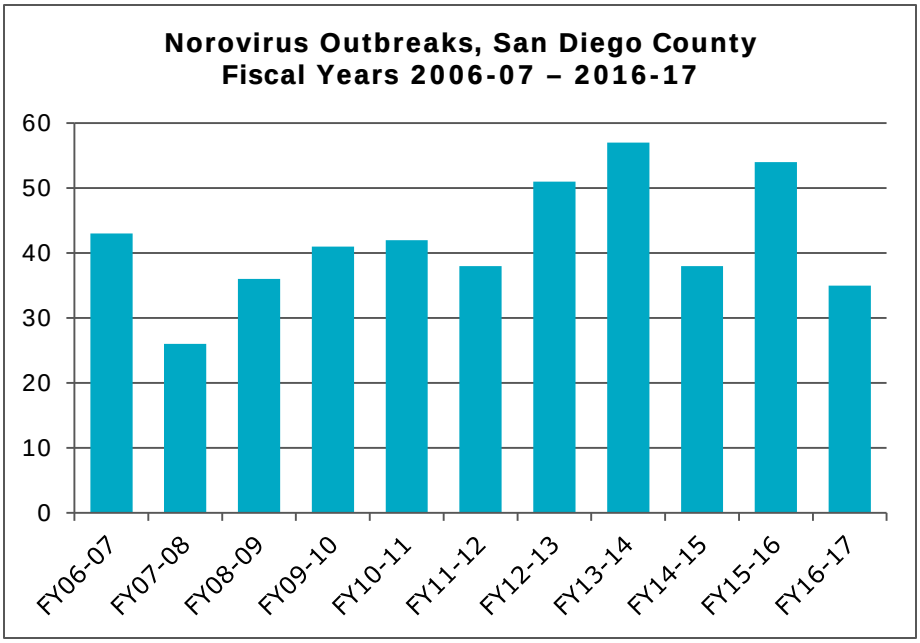
For more information:

- Centers for Disease Control and Prevention (CDC) Current Outbreak List
- CDC Foodborne Outbreaks website
- California Department of Public Health (CDPH) Foodborne Disease and Outbreaks website

NOROVIRUS OUTBREAKS, 2016-17

Disease Info

Infectious agent: Norovirus, a non-enveloped, single-stranded RNA virus in the family Caliciviridae; 3 genogroups (GI, GII, GIV) cause disease in humans
Incubation: Typically 12-48 hours, median in outbreaks is 33-36 hours
Mode of transmission: Fecal-oral route: either direct person-to-person contact, ingestion of food or water contaminated by feces, contact with contaminated environmental surfaces or objects, or ingestion of aerosolized vomitus
Symptoms: Vomiting, non-bloody diarrhea, nausea, abdominal pain, low-grade fever



Notes:

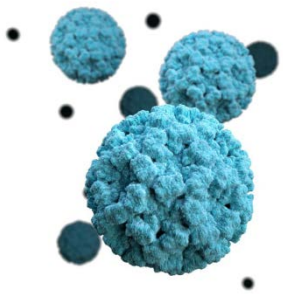
1. A confirmed norovirus outbreak requires that at least two cases are laboratory-confirmed; a probable norovirus outbreak requires one laboratory-confirmed case; in a suspect norovirus outbreak, at least 50% of cases report vomiting, average incubation is 24-48 hours, and average duration of illness is 12-60 hours.
2. Norovirus outbreak data are presented using fiscal years (the County fiscal year is July-June) rather than calendar years because this convention better illustrates the seasonal nature of norovirus outbreaks.

For more information:

- Centers for Disease Control and Prevention (CDC) Norovirus website
- CDC Norovirus U.S. Trends and Outbreaks website
- California Department of Public Health (CDPH) Norovirus website
- County of San Diego Norovirus website

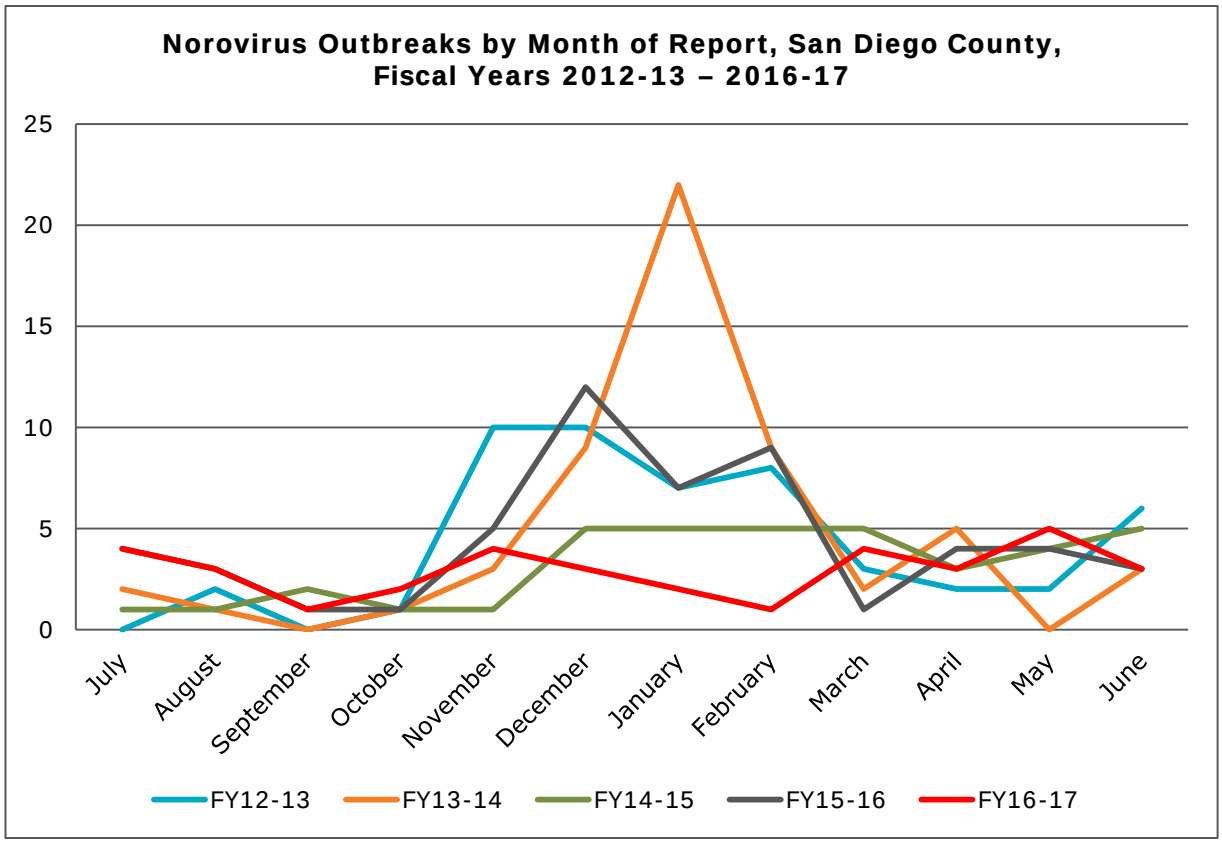
Key Points

- There were 35 norovirus outbreaks investigated by the Epidemiology Program in Fiscal Year (FY) 2016-17, below the average of 48 outbreaks over the previous five seasons.
- In 51% of the outbreaks, at least one human specimen tested positive for norovirus. The remaining outbreaks were classified as suspect norovirus based on clinical characteristics.
- Although norovirus infections and norovirus outbreaks occur year-round, and the peak may vary from year to year, the largest number of outbreaks usually occurs between December and February. In FY 2016-17, there was no real peak in San Diego County, though there were slightly more outbreaks investigated between March and May.
- In FY 2016-17, 26% of norovirus outbreaks were attributed to foodborne transmission; the rest were likely person-to-person, although contaminated surfaces and fomites may have also played a role.
- Of the suspect person-to-person norovirus outbreaks, nearly 70% were in congregate living facilities, such as long-term care or assisted living facilities. An additional 19% were in schools, child care facilities, or camps.
- The median number of cases per norovirus outbreak in FY 2016-17 was 19, with a range of 3-79 cases.



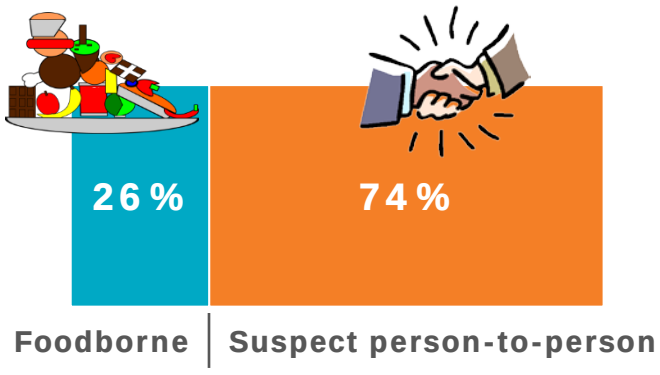
3D representation of norovirus virions based on electron microscopic imagery.
Illustrator: Alissa Eckert, MS, CDC Public Health Image Library

NOROVIRUS OUTBREAKS, 2016-17

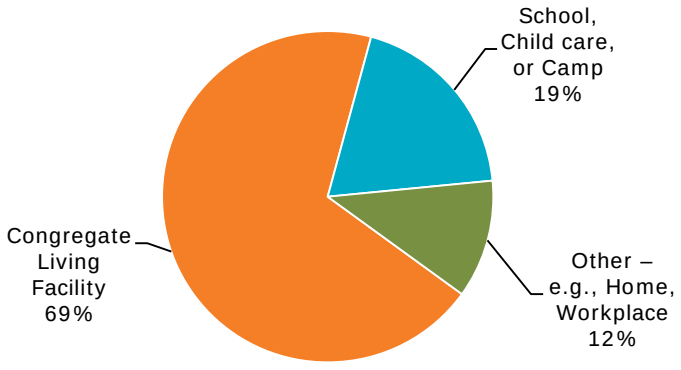


Norovirus Outbreaks, San Diego County, Fiscal Year 2016-17

Mode of Transmission



Location of Suspect Person-to-Person Norovirus Outbreaks

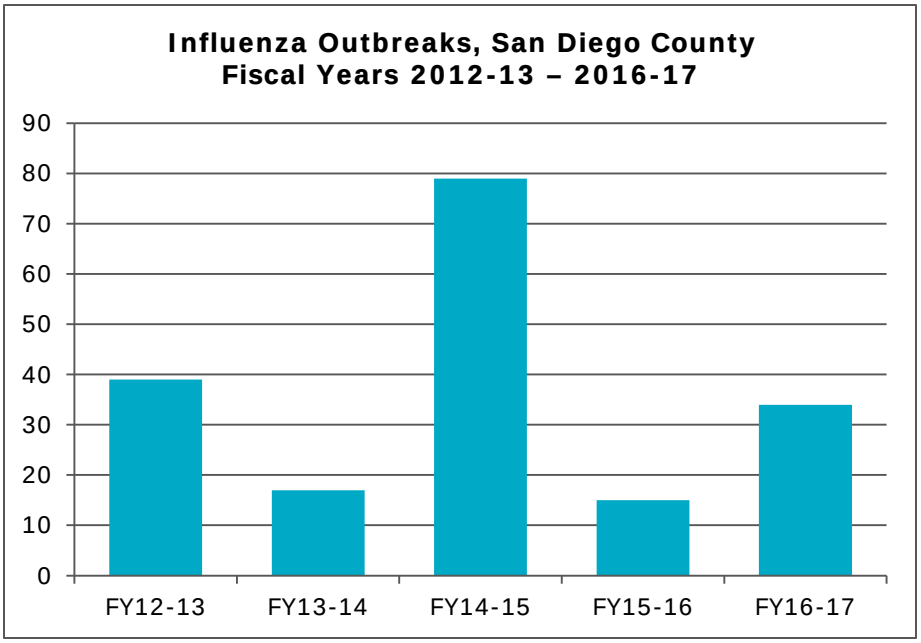


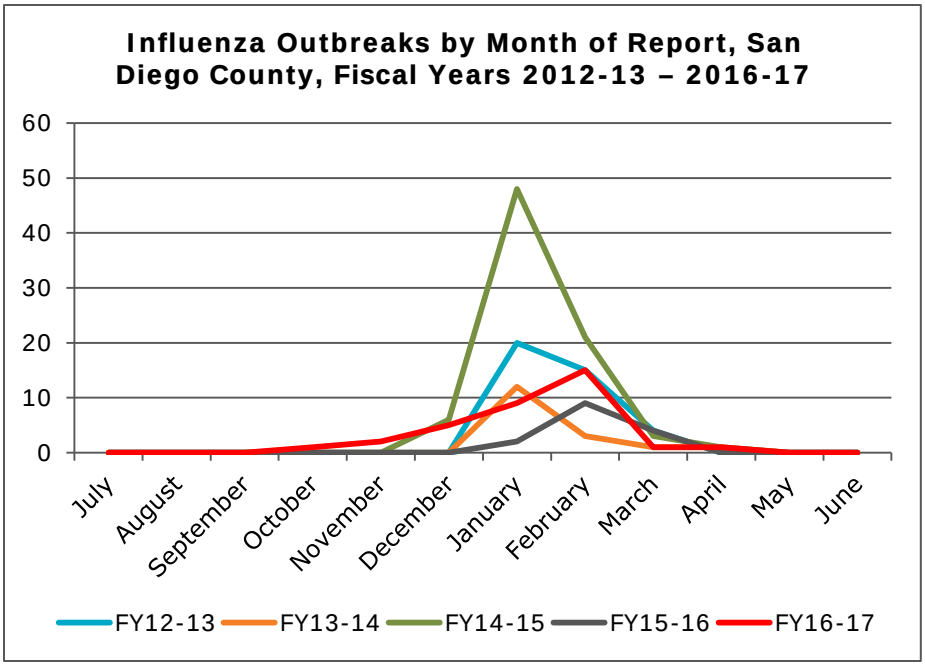
Congregate Living Facilities include long-term care facilities, assisted living facilities, and independent living facilities for seniors.

Number of cases per outbreak

Median: 19
Range: 3-79

INFLUENZA OUTBREAKS, 2016-17





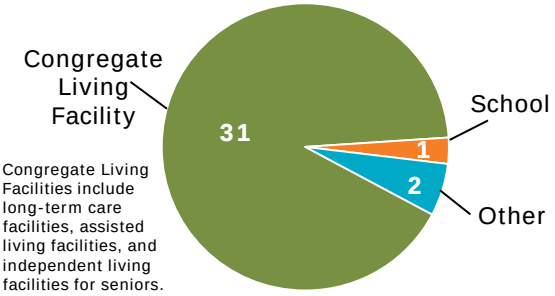
Key Points

- In Fiscal Year (FY) 2016-17, there were 34 influenza outbreaks investigated by the Epidemiology Program in San Diego County, twice the number of outbreaks in FY 2015-16.
- Most influenza outbreaks (91% in FY 2016-17) occur in congregate living facilities, most often facilities serving the elderly.
- All but one outbreak in FY 2016-17 were caused by influenza A; the remaining outbreak included cases of both influenza A and influenza B.
- The number of influenza outbreak reports in FY 2016-17 peaked in February, similar to other recent influenza seasons.
- In FY 2016-17, the median number of cases per influenza outbreak was 13, with a range of 2-154 cases.

Number of cases per outbreak

Median: 13
Range: 2-154

91% of outbreaks were in congregate living facilities



Congregate Living Facilities include long-term care facilities, assisted living facilities, and independent living facilities for seniors.

Notes:

1. Influenza outbreaks in institutions (e.g., long term care facilities, prisons, sleepover camps) require at least one case of laboratory-confirmed influenza in the setting of a cluster (at least two cases of influenza-like illness (ILI) with onset within a 72-hour period).
2. Influenza outbreak data are presented using fiscal years (the County fiscal year is July-June) rather than calendar years because this convention better illustrates the seasonal nature of influenza outbreaks.
3. The Epidemiology Program began active surveillance for influenza outbreaks in the 2012-13 influenza season; data for prior years are not comparable and are not presented here.
4. See the Influenza Season Summary section for more information on influenza, including disease information and resources.

DEMOGRAPHICS BY DISEASE

	Amebiasis [C]	Campylobacteriosis [C,P]	Chikungunya Virus Infection [C,P]	Coccidioidomycosis [C]	Cryptosporidiosis [C,P]	Dengue Virus Infection [C,P]	Encephalitis [C]	Giardiasis [C,P]
Total	10	883	2	313	54	12	43	317
Gender								
Female	2	423	1	97	19	8	15	122
Male	8	455	1	210	35	4	27	195
Other/Transgender	0	0	0	0	0	0	0	0
Unknown/Missing	0	5	0	6	0	0	1	0
Age in Years								
0-4	0	85	0	0	6	0	0	44
5-14	0	91	0	5	6	1	2	49
15-24	0	102	0	26	11	2	4	41
25-44	7	243	2	83	20	8	8	78
45-64	1	222	0	123	7	0	14	75
65+	2	139	0	76	4	1	15	30
Unknown/Missing	0	1	0	0	0	0	0	0
Race/Ethnicity								
American Indian/Alaska Native	0	2	0	1	0	0	1	1
Asian	0	25	0	15	0	4	0	10
Black/African-American	0	7	1	13	4	0	3	45
Hispanic/Latino	5	147	1	40	18	5	9	51
Native Hawaiian/Other Pacific Islander	0	0	0	0	0	0	0	1
White	0	163	0	44	18	3	14	169
Other	2	32	0	3	3	0	0	6
Two or More Races	0	1	0	0	0	0	1	0
Unknown/Missing	3	506	0	197	11	0	15	35
HHSA Service Region								
Central	1	125	1	46	20	4	5	80
East	0	108	0	30	5	3	3	60
North Central	2	128	1	30	10	2	14	45
North Coastal	1	142	0	19	5	1	4	41
North Inland	1	141	0	25	3	1	7	43
South	5	148	0	132	10	1	7	35
Unknown/Missing	0	91	0	31	1	0	3	14

Notes:

1. Inclusion criteria are based on CDC/CSTE surveillance case criteria (C,P,S = Confirmed, Probable, Suspect). See individual sections for further details.
2. Cases grouped into CDC disease years based on earliest date of onset, lab specimen collection, diagnosis, death, report received dates.
3. Race/ethnicity combines two variables collected separately, race and ethnicity. Persons of any race with Hispanic ethnicity are included in the Hispanic category. The other categories are non-Hispanic.
4. Health and Human Services Agency (HHSA) service regions are based on zip code of residence.

DEMOGRAPHICS BY DISEASE

	Hepatitis A, Acute [C]	Hepatitis B, Acute [C]	Hepatitis B, Chronic [C,P]	Hepatitis C, Chronic [C,P]	Legionellosis [C]	Listeriosis [C]	Lyme Disease [C,P]
Total	576	13	868	3,129	66	15	21
Gender							
Female	182	4	372	1,055	17	8	12
Male	392	9	479	1,926	49	7	9
Other/Transgender	2	0	1	0	0	0	0
Unknown/Missing	0	0	16	148	0	0	0
Age in Years							
0-4	0	0	0	7	1	0	0
5-14	2	0	10	14	0	0	1
15-24	22	0	47	194	0	0	3
25-44	289	6	355	997	4	4	5
45-64	231	2	319	1,417	27	1	8
65+	32	5	134	488	34	10	4
Unknown/Missing	0	0	3	12	0	0	0
Race/Ethnicity							
American Indian/Alaska Native	3	0	3	3	3	0	0
Asian	11	0	150	23	1	1	2
Black/African-American	42	2	38	45	4	0	0
Hispanic/Latino	78	2	22	119	12	9	1
Native Hawaiian/Other Pacific Islander	0	0	7	3	0	0	0
White	346	8	62	378	39	3	13
Other	9	0	42	72	1	0	0
Two or More Races	15	1	3	1	0	1	0
Unknown/Missing	72	0	541	2,485	6	1	5
HHSA Service Region							
Central	210	4	170	541	4	3	5
East	100	1	72	358	17	1	4
North Central	92	1	189	274	9	3	6
North Coastal	27	2	59	355	10	1	1
North Inland	35	2	100	331	14	2	4
South	44	2	113	617	10	4	1
Unknown/Missing	68	1	165	653	2	1	0

Notes:

1. Inclusion criteria are based on CDC/CSTE surveillance case criteria (C,P,S = Confirmed, Probable, Suspect). See individual sections for further details.
2. Cases grouped into CDC disease years based on earliest date of onset, lab specimen collection, diagnosis, death, report received dates.
3. Race/ethnicity combines two variables collected separately, race and ethnicity. Persons of any race with Hispanic ethnicity are included in the Hispanic category. The other categories are non-Hispanic.
4. Health and Human Services Agency (HHSA) service regions are based on zip code of residence.

DEMOGRAPHICS BY DISEASE

	Malaria [C]	Measles (Rubeola) [C]	Meningitis [C,P,S]	Meningococcal Disease [C,P*]	Mumps [C,P]	Pertussis [C,P,S]	Salmonellosis [C,P]
Total	8	2	260	1	15	1,162	576
Gender							
Female	4	2	115	-	6	570	307
Male	4	0	144	-	8	583	268
Other/Transgender	0	0	0	-	0	3	0
Unknown/Missing	0	0	1	-	1	6	1
Age in Years							
0-4	0	0	41	-	0	270	96
5-14	1	0	12	-	1	471	64
15-24	0	0	44	-	8	327	62
25-44	4	1	88	-	4	41	132
45-64	3	1	54	-	1	37	127
65+	0	0	21	-	1	16	95
Unknown/Missing	0	0	0	-	0	0	0
Race/Ethnicity							
American Indian/Alaska Native	0	0	0	-	0	1	3
Asian	1	0	8	-	2	37	24
Black/African-American	1	0	6	-	1	19	16
Hispanic/Latino	1	1	46	-	2	338	220
Native Hawaiian/Other Pacific Islander	0	0	1	-	0	6	4
White	2	1	83	-	9	637	244
Other	1	0	12	-	1	35	12
Two or More Races	1	0	2	-	0	18	1
Unknown/Missing	1	0	102	-	0	71	52
HHSA Service Region							
Central	3	0	55	-	5	129	89
East	3	0	27	-	1	78	81
North Central	0	0	51	-	4	182	107
North Coastal	0	2	44	-	2	355	86
North Inland	0	0	43	-	0	327	109
South	2	0	31	-	2	81	99
Unknown/Missing	0	0	9	-	1	10	5

*Demographic information not presented for one case of meningococcal disease.

Notes:

1. Inclusion criteria are based on CDC/CSTE surveillance case criteria (C,P,S = Confirmed, Probable, Suspect). See individual sections for further details.
2. Cases grouped into CDC disease years based on earliest date of onset, lab specimen collection, diagnosis, death, report received dates.
3. Race/ethnicity combines two variables collected separately, race and ethnicity. Persons of any race with Hispanic ethnicity are included in the Hispanic category. The other categories are non-Hispanic.
4. Health and Human Services Agency (HHSA) service regions are based on zip code of residence.

DEMOGRAPHICS BY DISEASE

	Shiga toxin-Producing *E. coli* C,P	Shigellosis C,P	Typhoid Fever C,P	Vibriosis C,P	West Nile Virus Infection C,P	Yersiniosis C,P	Zika Virus Infection C,P
Total	288	334	2	50	2	54	21
Gender							
Female	20	123	2	13	2	24	12
Male	268	209	0	37	0	30	9
Other/Transgender	0	2	0	0	0	0	0
Unknown/Missing	0	0	0	0	0	0	0
Age in Years							
0-4	13	20	1	0	0	2	3
5-14	7	30	1	1	0	0	1
15-24	246	24	0	3	0	5	3
25-44	12	96	0	14	0	18	10
45-64	6	120	0	20	2	14	4
65+	4	44	0	12	0	15	0
Unknown/Missing	0	0	0	0	0	0	0
Race/Ethnicity							
American Indian/Alaska Native	0	1	0	0	0	0	0
Asian	0	10	1	2	0	1	4
Black/African-American	2	16	0	0	0	0	1
Hispanic/Latino	14	125	0	8	0	4	13
Native Hawaiian/Other Pacific Islander	2	3	0	1	0	0	0
White	25	134	1	30	2	8	3
Other	2	3	0	0	0	0	0
Two or More Races	1	1	0	0	0	0	0
Unknown/Missing	242	41	0	9	0	41	0
HHSA Service Region							
Central	6	144	0	5	0	1	6
East	4	26	0	7	1	4	2
North Central	253	38	1	10	0	9	4
North Coastal	8	39	0	10	0	3	3
North Inland	7	29	0	10	1	3	2
South	9	43	1	5	0	3	4
Unknown/Missing	1	15	0	3	0	31	0

Notes:

1. Inclusion criteria are based on CDC/CSTE surveillance case criteria (C,P,S = Confirmed, Probable, Suspect). See individual sections for further details.
2. Cases grouped into CDC disease years based on earliest date of onset, lab specimen collection, diagnosis, death, report received dates.
3. Race/ethnicity combines two variables collected separately, race and ethnicity. Persons of any race with Hispanic ethnicity are included in the Hispanic category. The other categories are non-Hispanic.
4. Health and Human Services Agency (HHSA) service regions are based on zip code of residence.

ZIP CODES BY HHSA SERVICE REGION

San Diego County is divided into six Health and Human Services Agency (HHSA) service regions, which were created by grouping contiguous zip codes. The zip codes that make up each region are listed below. The list only includes current geographic zip codes, not P.O. boxes or historic zip codes; however, case-patients with these zip codes in their address are included in the counts for the enclosing zip code and region.

Central Region
92101, 92102, 92103, 92104, 92105, 92113, 92114, 92115, 92116, 92134, 92136, 92139, 92182

East Region
91901, 91905, 91906, 91916, 91917, 91931, 91934, 91935, 91941, 91942, 91945, 91948, 91962, 91963, 91977, 91978, 91980, 92019, 92020, 92021, 92040, 92071

North Central Region
92037, 92093, 92106, 92107, 92108, 92109, 92110, 92111, 92117, 92119, 92120, 92121, 92122, 92123, 92124, 92126, 92130, 92131, 92140, 92145, 92161

North Coastal Region
92007, 92008, 92009, 92010, 92011, 92014, 92024, 92054, 92055, 92056, 92057, 92058, 92067, 92075, 92081, 92083, 92084, 92091, 92672

North Inland Region
92003, 92004, 92025, 92026, 92027, 92028, 92029, 92036, 92059, 92060, 92061, 92064, 92065, 92066, 92069, 92070, 92078, 92082, 92086, 92096, 92127, 92128, 92129, 92259, 92536

South Region
91902, 91910, 91911, 91913, 91914, 91915, 91932, 91950, 92118, 92135, 92154, 92155, 92173

REPORTABLE DISEASES AND CONDITIONS

The following reporting information and list of diseases and conditions reportable in California can be found on pages 2-4 of the Confidential Morbidity Report.

Title 17, California Code of Regulations (CCR) §2500, §2593, §2641.5-2643.20, and §2800-2812 Reportable Diseases and Conditions*

§ 2500. REPORTING TO THE LOCAL HEALTH AUTHORITY.

- § 2500(b) It shall be the duty of every health care provider, knowing of or in attendance on a case or suspected case of any of the diseases or condition listed below, to report to the local health officer for the jurisdiction where the patient resides. Where no health care provider is in attendance, any individual having knowledge of a person who is suspected to be suffering from one of the diseases or conditions listed below may make such a report to the local health officer for the jurisdiction where the patient resides.
- § 2500(c) The administrator of each health facility, clinic, or other setting where more than one health care provider may know of a case, a suspected case or an outbreak of disease within the facility shall establish and be responsible for administrative procedures to assure that reports are made to the local officer.
- § 2500(a)(14) "Health care provider" means a physician and surgeon, a veterinarian, a podiatrist, a nurse practitioner, a physician assistant, a registered nurse, a nurse midwife, a school nurse, an infection control practitioner, a medical examiner, a coroner, or a dentist.

URGENCY REPORTING REQUIREMENTS [17 CCR §2500(h)(i)]

- ✆ ! = Report immediately by telephone (designated by a ✦ in regulations).
- † = Report immediately by telephone when two or more cases or suspected cases of foodborne disease from separate households are suspected to have the same source of illness (designated by a • in regulations).
- ✆ = Report by telephone within one working day of identification (designated by a + in regulations).
- FAX ✆ ✉ = Report by electronic transmission (including FAX), telephone, or mail within one working day of identification (designated by a + in regulations).
- WEEK = All other diseases/conditions should be reported by electronic transmission (including FAX), telephone, or mail within seven calendar days of identification.

REPORTABLE COMMUNICABLE DISEASES §2500(i)(1)

Disease Name	Urgency	Disease Name	Urgency
Amebiasis	FAX ✆ ✉	Listeriosis	FAX ✆ ✉
Anaplasmosis	WEEK	Lyme Disease	WEEK
Anthrax, human or animal	✆ !	Malaria	FAX ✆ ✉
Babesiosis	FAX ✆ ✉	Measles (Rubeola)	✆ !
Botulism (Infant, Foodborne, wound, Other)	✆ !	Meningitis, Specify Etiology: Viral, Bacterial, Fungal, Parasitic	FAX ✆ ✉
Brucellosis, animal (except infections due to *Brucella canis*)	WEEK	Meningococcal Infections	✆ !
Brucellosis, human	✆ !	Mumps	WEEK
Campylobacteriosis	FAX ✆ ✉	Novel Virus Infection with Pandemic Potential	✆ !
Chancroid	WEEK	Paralytic Shellfish Poisoning	✆ !
Chickenpox (Varicella) (outbreaks, hospitalizations and deaths)	FAX ✆ ✉	Pertussis (Whooping Cough)	FAX ✆ ✉
Chikungunya Virus Infection	FAX ✆ ✉	Plague, human or animal	✆ !
Chlamydia trachomatis infections, including lymphogranuloma venereum (LGV)	WEEK	Poliovirus Infection	FAX ✆ ✉

REPORTABLE DISEASES AND CONDITIONS

Disease Name	Urgency	Disease Name	Urgency
Cholera	⊘ !	Psittacosis	FAX ⊘ ✉
Ciguatera Fish Poisoning	⊘ !	Q Fever	FAX ⊘ ✉
Coccidioidomycosis	WEEK	Rabies, human or animal	⊘ !
Creutzfeldt-Jakob Disease (CJD) and other Transmissible Spongiform Encephalopathies (TSE)	WEEK	Relapsing Fever	FAX ⊘ ✉
Cryptosporidiosis	FAX ⊘ ✉	Respiratory Syncytial Virus (only report a death in a patient less than less than five years of age)	WEEK
Cyclosporiasis	WEEK	Rickettsial Diseases (non-Rocky Mountain Spotted Fever), including Typhus and Typhus-like illnesses	WEEK
Cysticercosis or taeniasis	WEEK	Rocky Mountain Spotted Fever	WEEK
Dengue Virus Infection	⊘ !	Rubella (German Measles)	WEEK
Diphtheria	⊘ !	Rubella Syndrome, Congenital	WEEK
Domoic Acid Poisoning (Amnesic Shellfish Poisoning)	⊘ !	Salmonellosis (Other than Typhoid Fever)	FAX ⊘ ✉
Ehrlichiosis	WEEK	Scombroid Fish Poisoning	⊘ !
Encephalitis, Specify Etiology: Viral, Bacterial, Fungal, Parasitic	FAX ⊘ ✉	Shiga toxin (detected in feces)	⊘ !
Escherichia coli: shiga toxin producing (STEC) including *E. coli* O157	⊘ !	Shigellosis	FAX ⊘ ✉
Flavivirus infection of undetermined species	⊘ !	Smallpox(Variola)	⊘ !
Foodborne Disease	† FAX ⊘ ✉	Streptococcal Infections (Outbreaks of Any Type and Individual Cases in Food Handlers and Dairy Workers Only)	FAX ⊘ ✉
Giardiasis	WEEK	Syphilis	FAX ⊘ ✉
Gonococcal Infections	WEEK	Tetanus	WEEK
Haemophilus influenzae, invasive disease, all serotypes (report an incident less than 5 years of age)	FAX ⊘ ✉	Trichinosis	FAX ⊘ ✉
Hantavirus Infections	FAX ⊘ ✉	Tuberculosis	FAX ⊘ ✉
Hemolytic Uremic Syndrome	⊘ !	Tularemia, animal	WEEK
Hepatitis A, acute infection	FAX ⊘ ✉	Tularemia, human	⊘ !
Hepatitis B (specify acute case or chronic)	WEEK	Typhoid Fever, Cases and Carriers	FAX ⊘ ✉
Hepatitis C (specify acute case or chronic)	WEEK	*Vibrio* Infections	FAX ⊘ ✉
Hepatitis D (Delta) (specify acute case or chronic)	WEEK	Viral Hemorrhagic Fevers, human or animal (e.g., Crimean-Congo, Ebola, Lassa, and Marburg viruses)	⊘ !
Hepatitis E, acute infection	WEEK	West Nile Virus (WNV) Infection	FAX ⊘ ✉
Human Immunodeficiency Virus (HIV) infection, stage 3 (AIDS)	WEEK	Yellow Fever	⊘ !
Human Immunodeficiency Virus (HIV), acute infection	⊘	Yersiniosis	FAX ⊘ ✉

REPORTABLE DISEASES AND CONDITIONS

Disease Name	Urgency	Disease Name	Urgency
Influenza, deaths in laboratory-confirmed cases for age 0-64 years	WEEK	Zika Virus Infection	⊘ !
Influenza, novel strains (human)	⊘ !	OCCURRENCE of ANY UNUSUAL DISEASE	⊘ !
Legionellosis	WEEK	OUTBREAKS of ANY DISEASE (Including diseases not listed in §2500). Specify if institutional and/or open community.	⊘ !
Leprosy (Hansen Disease)	WEEK		
Leptospirosis	WEEK		

HIV REPORTING BY HEALTH CARE PROVIDERS §2641.30-2643.20

Human Immunodeficiency Virus (HIV) infection at all stages is reportable by traceable mail, person-to-person transfer, or electronically within seven calendar days. For complete HIV-specific reporting requirements, see Title 17, CCR, §2641.30-2643.20 and the California Department of Public Health's HIV Surveillance and Case Reporting Resource page (https://www.cdph.ca.gov/Programs/CID/DOA/Pages/OA_case_surveillance_resources.aspx)

REPORTABLE NONCOMMUNICABLE DISEASES AND CONDITIONS §2800–2812 and §2593(b)

Disorders Characterized by Lapses of Consciousness

(§2800-2812) Pesticide-related illness or injury (known or suspected cases)**

Cancer, including benign and borderline brain tumors (except (1) basal and squamous skin cancer unless occurring on genitalia, and (2) carcinoma in-situ and CIN III of the Cervix) (§2593)***

LOCALLY REPORTABLE DISEASES (If Applicable):

Necrotizing fasciitis

NOTE: For diseases that require "immediate" reporting on weekends/holidays, please call (858) 565-5255.

* This form is designed for health care providers to report those diseases mandated by Title 17, California Code of Regulations (CCR). Failure to report is a misdemeanor (Health & Safety Code §120295) and is a citable offense under the Medical Board of California Citation and Fine Program (Title 16, CCR, §1364.10 and 1364.11).

** Failure to report is a citable offense and subject to civil penalty ($250) (Health and Safety Code §105200).

*** The Confidential Physician Cancer Reporting Form may also be used. See Physician Reporting Requirements for Cancer Reporting in CA at: www.ccrcal.org

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Human West Nile Virus Activity, California, 2003-2018. http://www.westnile.ca.gov/

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San Diego Association of Governments
http://www.sandag.org/

State of California, Department of Finance, E-2. California County Population Estimates and Components of Change by Year — July 1, 2010–2017, December 2017.
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