SAN DIEGO COUNTY ANNUAL COMMUNICABLE DISEASE REPORT

2016

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

PHAB ACCREDITED HEALTH DEPARTMENT PUBLIC HEALTH ACCREDITATION BOARD

SAN DIEGO COUNTY ANNUAL COMMUNICABLE DISEASE REPORT 2016

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

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COUNTY OF SAN DIEGO HHSA HEALTH AND HUMAN SERVICES AGENCY | LIVE WELL SAN DIEGO

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Communicable disease surveillance in San Diego County is a collaborative effort among Public Health Services, a department of the County of San Diego Health and Human Services Agency, hospitals, medical providers, laboratories, and the San Diego Health Connect Health Information Exchange. We would like to thank all involved for their contributions to disease reporting.

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

We would also like to thank the subject matter experts, advisory team, 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.

All photos for the cover were obtained from the Centers for Disease Control and Prevention Public Health Image Library. Left: CDC/Amanda Mills; top center: CDC/James Archer; middle center: CDC/Debora Cartagena; bottom center: CDC/James Gathany; right: CDC/ Amanda Mills

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INTRODUCTION

The purpose of this report is to provide an overview of select communicable diseases in San Diego County in 2016. 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. An important component of meeting these goals is 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 (e.g., measles, meningococcal disease). Also included are an influenza season summary and an outbreak investigation summary. Not covered in this report are diseases investigated by other PHS branches or programs. 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 reporting to the local health department by health care providers (Sections 2500, 2593, 2641.5-2643.20, 2800-2812, and 2593) of over 80 disease and conditions, as well as the occurrence of any unusual disease, and outbreaks of any disease. 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 reportable conditions, 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 level data are made available each week in CDC's *Morbidity and Mortality Weekly Report*, as well as summarized annually. State and national level disease data for this report were obtained from these sources. 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 on the original report forms.

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.

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 variously 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 (here, 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.

INTRODUCTION

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 2016 began on 1/3/2016 and ended on 12/31/2016.

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.

Organization and Content

The report begins with a section giving an overview of the San Diego County population in 2016. 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 2012-2016 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 as bars the case counts by month for 2016, 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 case counts.

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. 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 2016 data, but in two instances, three years of data are aggregated in order to allow for a geographic display of the data. 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. One disease section includes a different type of map: the animal rabies map displays the points where rabid animals were found.

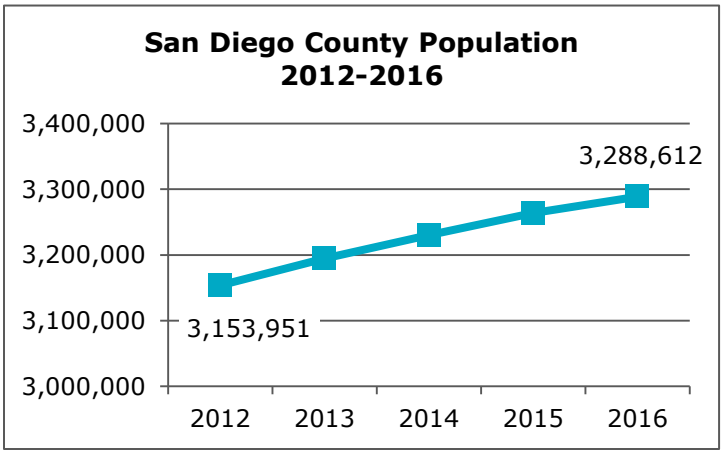
Clinical, Risk, and Laboratory Data

Whenever possible, clinical and risk data are presented. Generally, this requires sufficient case counts to make 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 a bit differently. The influenza season summary and norovirus and influenza outbreak summaries present data by fiscal year, focusing on fiscal year 2015-16. 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 2016 is also included. The specific tables and graphs in these sections depend on the nature of the data. 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.

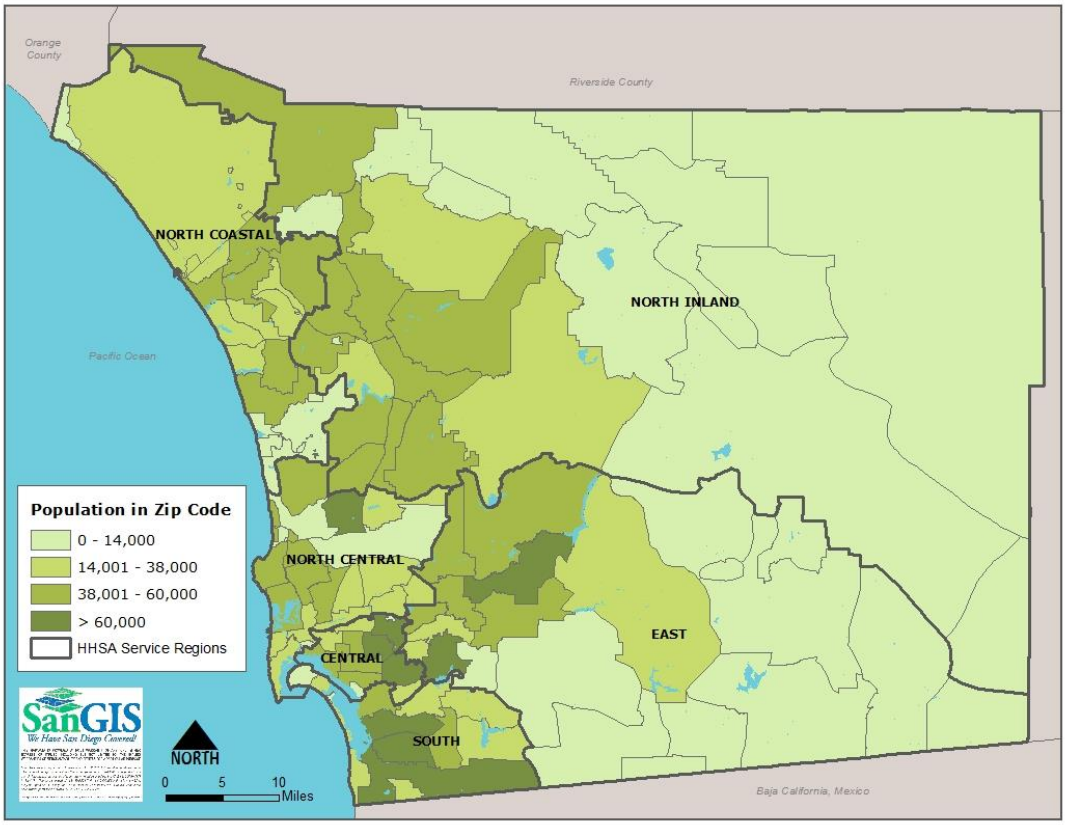
SAN DIEGO COUNTY POPULATION



HHSA Service Regions	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	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.

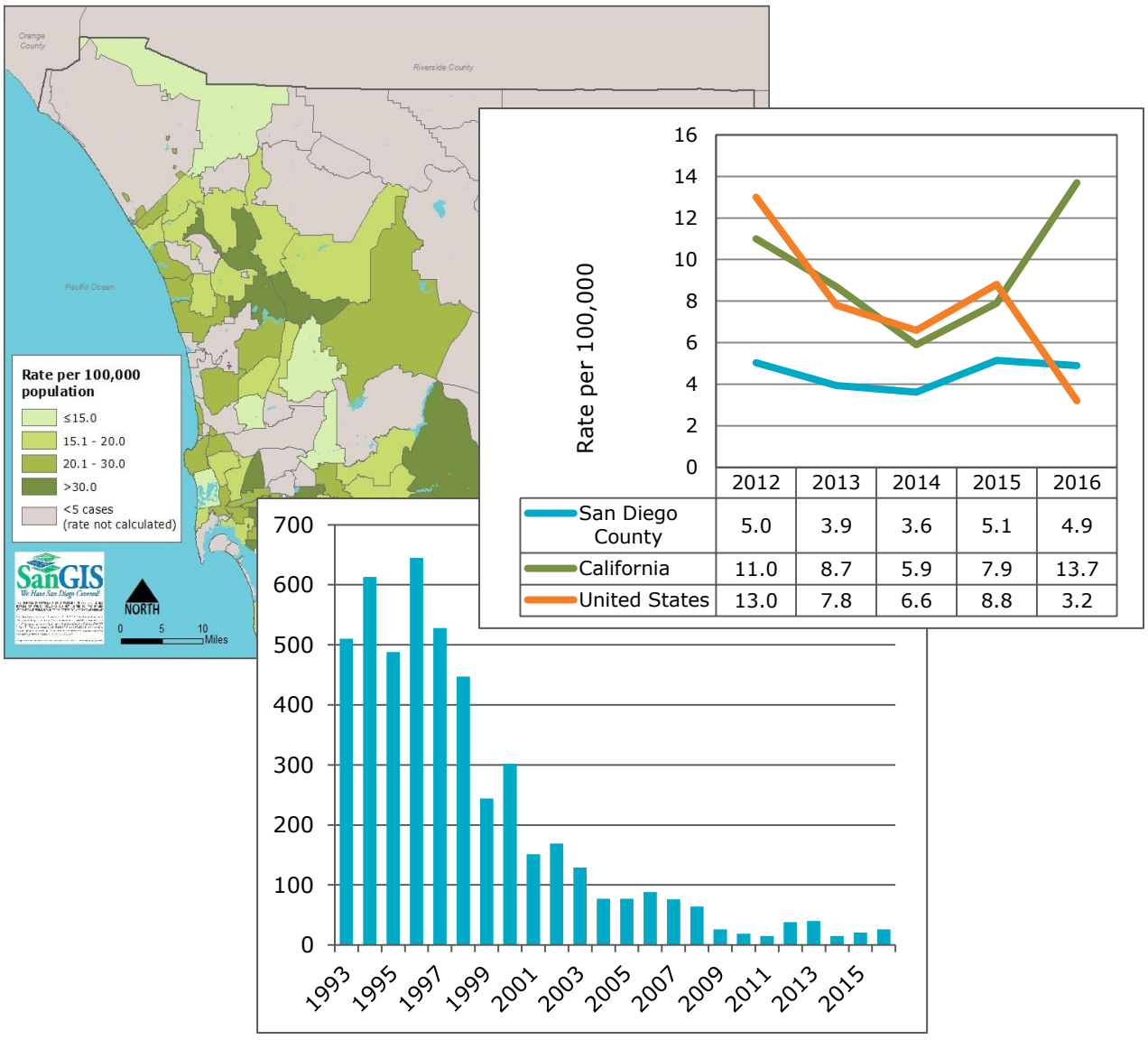
For more information on population estimates, including methodology, see www.sandag.org.

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 (e.g., measles, meningococcal disease).

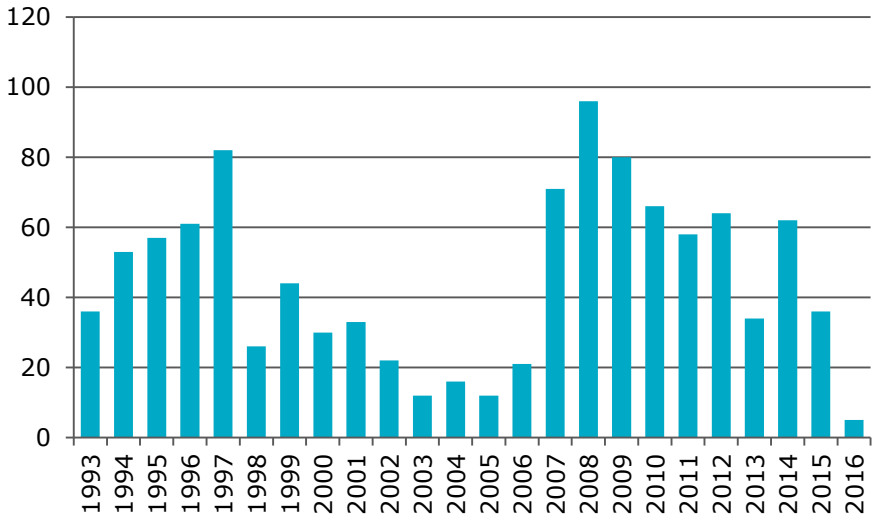


AMEBIASIS

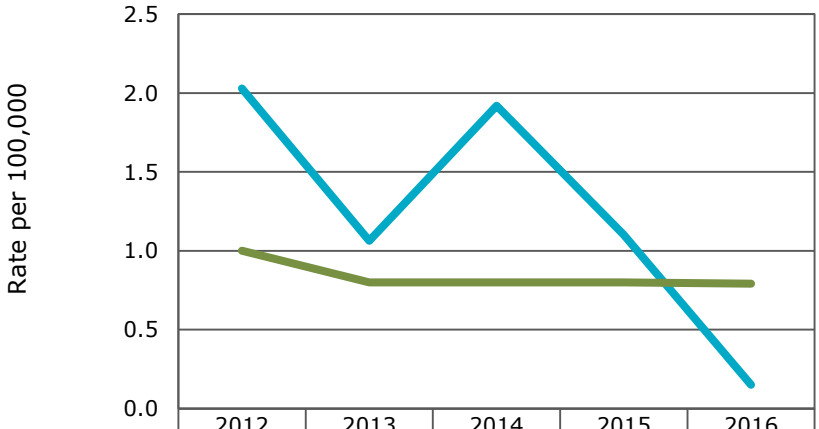
Disease Info

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 1993-2016



Amebiasis Incidence, San Diego County and California, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	2.0	1.1	1.9	1.1	0.2
California	1.0	0.8	0.8	0.8	0.8

Key Points

- There were five cases of amebiasis among San Diego County residents in 2016. This significant decline from previous years was due to a change in the case review criteria used by the County of San Diego Epidemiology and Immunization Services Branch (see notes).
- The incidence rate of amebiasis among San Diego County residents dropped substantially from 2.0 per 100,000 population in 2012 to 0.2 in 2016. Incidence in California remained stable just below 1.0 per 100,000 population during most of that time period.
- The previous increase in San Diego County cases in the mid-2000s was largely the result of initiation of reporting by the refugee health screening program.
- All 2016 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:

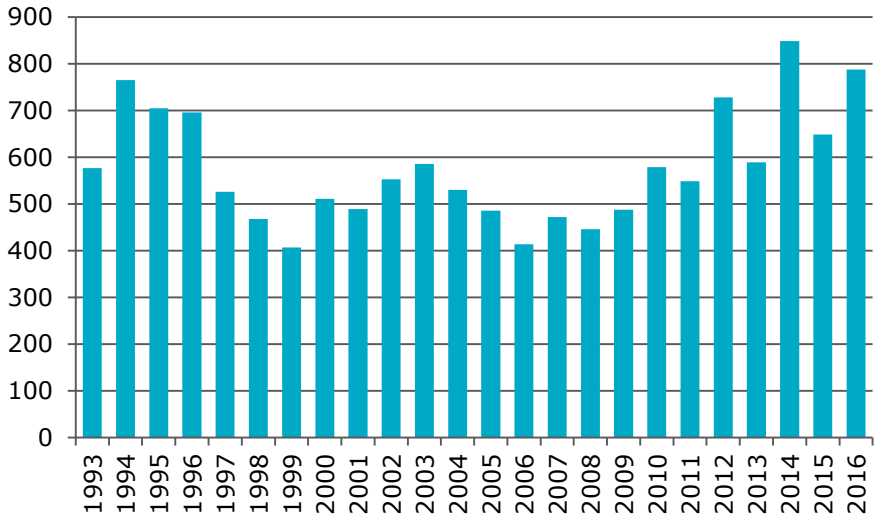
1. The parasite *Entamoeba histolytica* cannot be distinguished by microscopy, which was long the standard diagnostic test, from *Entamoeba dispar*, which is not thought to cause similar disease. In 2016, San Diego County began counting confirmed cases with laboratory evidence of *E. histolytica* (e.g., 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

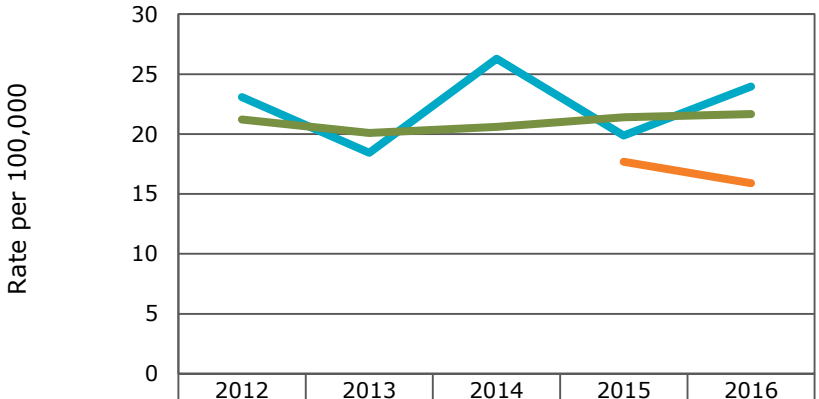
Disease Info

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 1993-2016



Campylobacteriosis Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	23.1	18.4	26.3	19.9	24.0
California	21.2	20.1	20.6	21.4	21.7
United States				17.7	15.9

Key Points

- There were 788 cases of campylobacteriosis among San Diego County residents in 2016. Counts have been higher in recent years, possibly related to increased use of culture-independent diagnostic testing methods.
- San Diego County and California incidences were relatively similar between 2012-2016, with rates in the 20-25 per 100,000 population range. In contrast, United States incidence is slightly lower. National data have only been available since 2015 when campylobacteriosis became nationally notifiable.
- In San Diego County, campylobacteriosis cases are most common during the summer and fall.
- Although the highest case counts can be observed among adults aged 25-64 years, the rate of infection is highest among young children under five years of age (32 per 100,000 population).
- Zip codes with higher incidence of campylobacteriosis can be found in many areas of the county.

For more information:

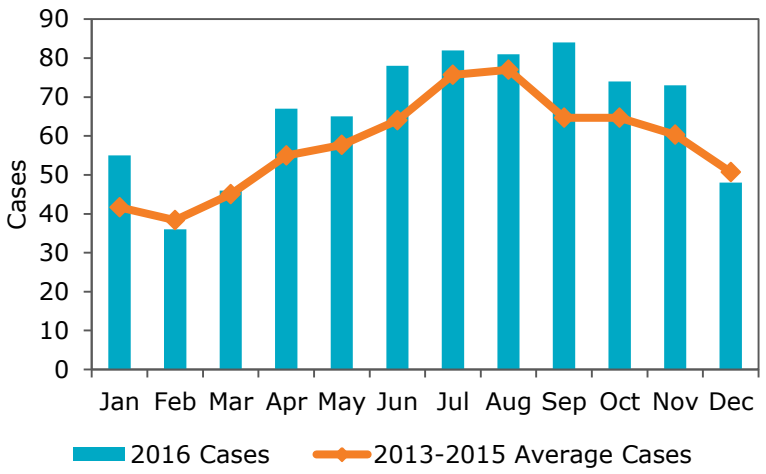
- Centers for Disease Control and Prevention (CDC) *Campylobacter* website
- CDC/CSTE Campylobacteriosis Case Definition
- California Department of Public Health (CDPH) Campylobacteriosis website
- CDPH Food and Drug Branch Food Safety Program website

Notes:

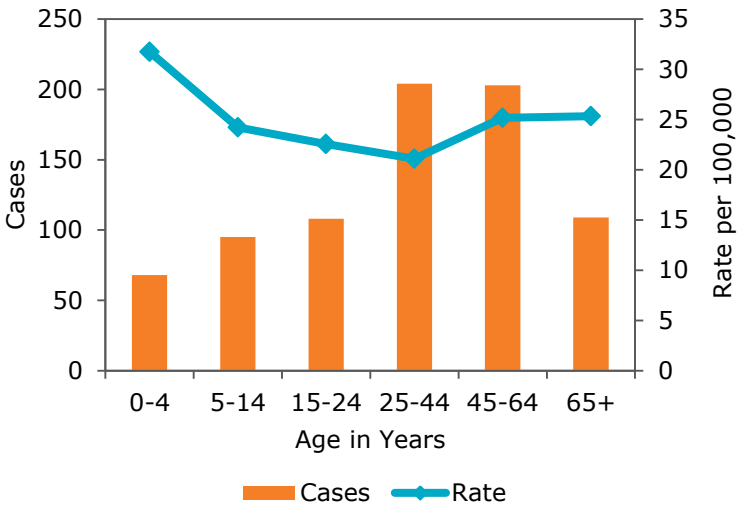
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Campylobacteriosis has been nationally notifiable since 2015.
3. The Epidemiology Program tracks, but does not investigate most campylobacteriosis cases; clinical and epidemiological information is not available for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

CAMPYLOBACTERIOSIS

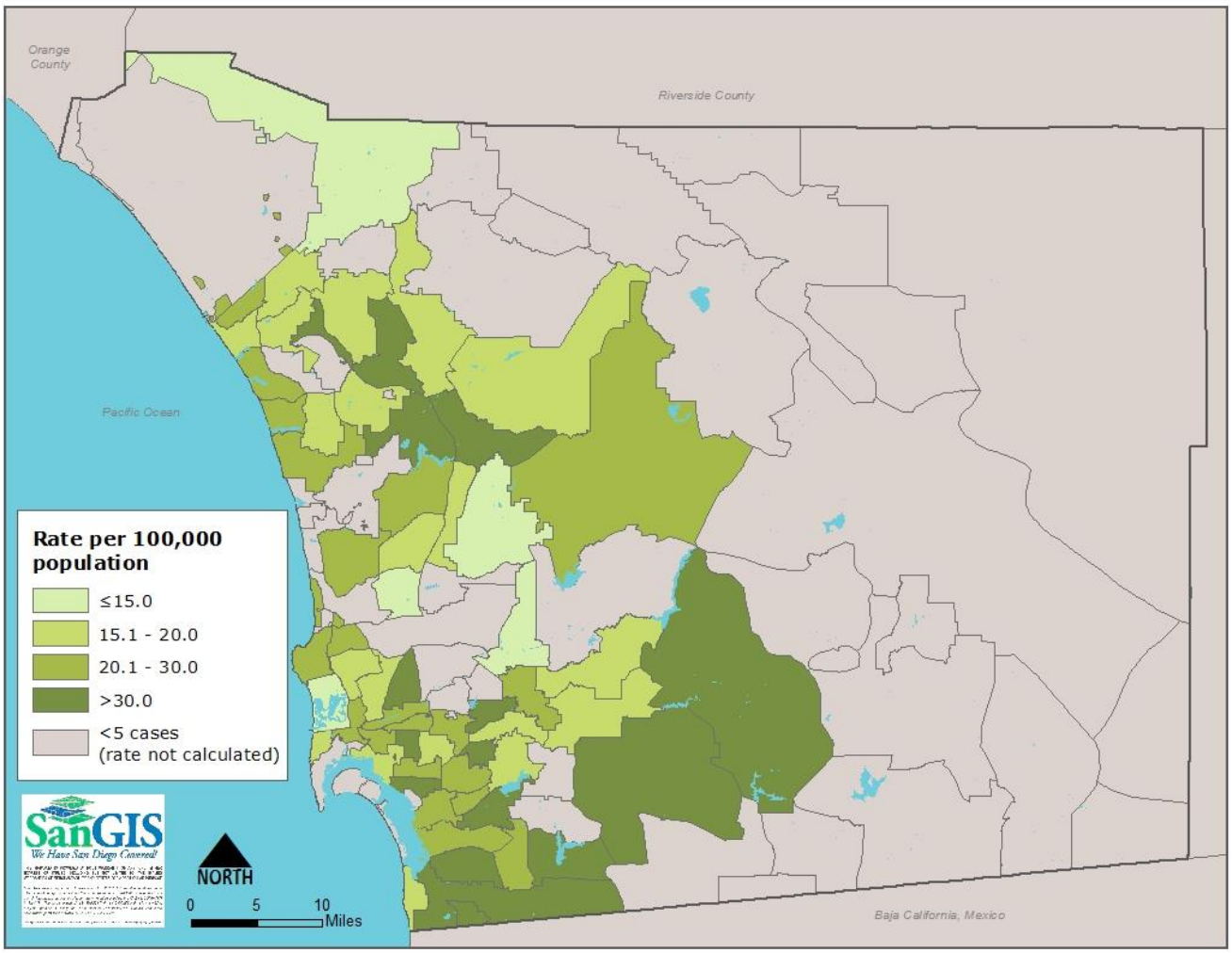
Campylobacteriosis Cases by Month of Onset, San Diego County, 2016



Campylobacteriosis Cases and Rates by Age, San Diego County, 2016



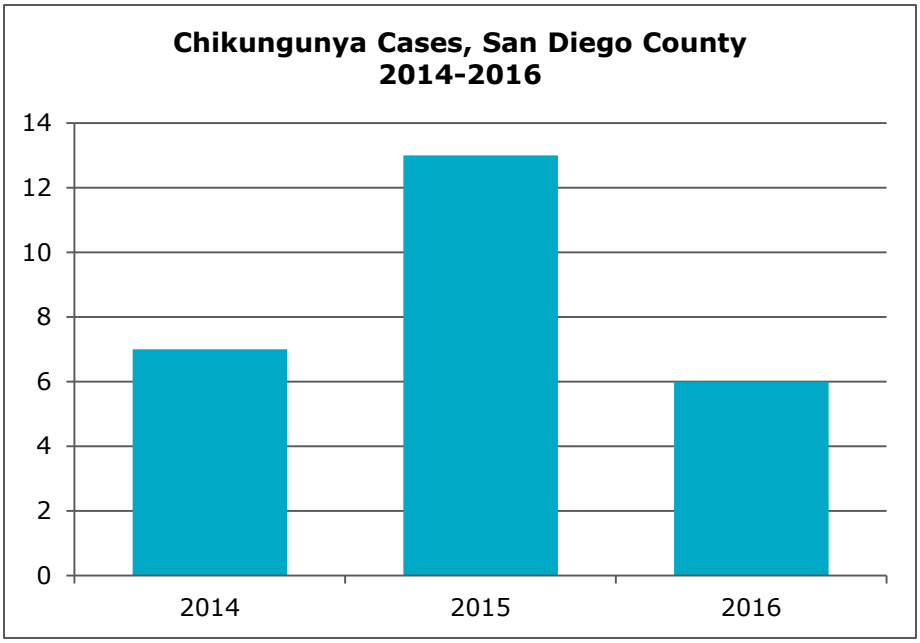
Campylobacteriosis Rates by Zip Code, San Diego County, 2016

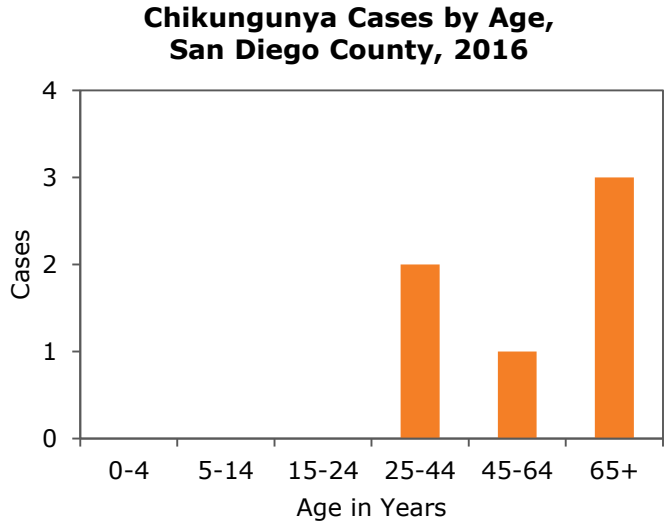


CHIKUNGUNYA VIRUS INFECTION

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





Key Points

- There were six cases of chikungunya virus infection among San Diego County residents in 2016.
- There have been 26 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.
- All of the San Diego County cases of chikungunya virus infection in 2016 were in adults.
- Chikungunya is not endemic in San Diego County. Although invasive *Aedes* mosquitoes have recently been detected in the county, all six cases in 2016 were acquired during travel to Asia and the Pacific or Latin America and the Caribbean.

For more information:

- Centers for Disease Control and Prevention (CDC) Chikungunya website
- CDC Health Information for International Travel (the Yellow Book) – Chikungunya
- CDC Chikungunya Virus in the United States website
- 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:

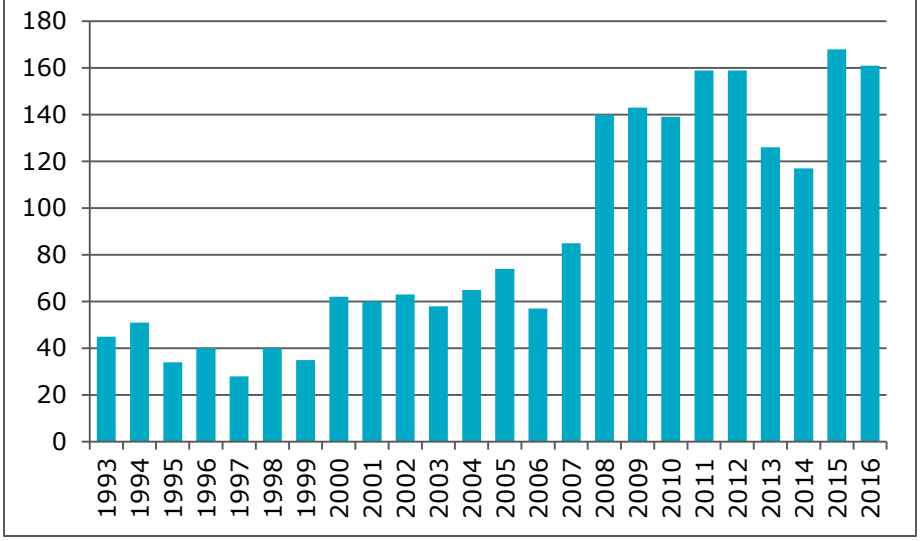
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Chikungunya has been nationally notifiable since 2015. It was added to the list of diseases reportable under the umbrella of arboviral diseases, neuroinvasive and non-neuroinvasive.
3. Rates not calculated by age group due to counts <5.

COCCIDIOIDOMYCOSIS

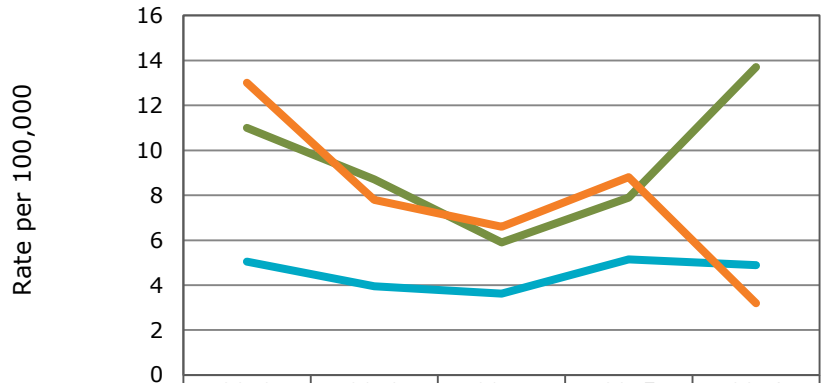
Disease Info

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. Approximately 60% of infections are asymptomatic.

Coccidioidomycosis Cases, San Diego County 1993-2016



Coccidioidomycosis Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	5.0	3.9	3.6	5.1	4.9
California	11.0	8.7	5.9	7.9	13.7
United States	13.0	7.8	6.6	8.8	3.2

Key Points

- A total of 161 coccidioidomycosis cases were reported among San Diego County residents in 2016. An increase in cases was noted beginning in 2008, following a change to the CDC/CSTE case definition.
- In recent years, incidence rates of coccidioidomycosis have remained stable in San Diego County. In 2016, the incidence rate was lower in San Diego County (4.9 per 100,000) compared to California (13.7 per 100,000), and slightly higher than that for the United States (3.2 per 100,000).
- In 2016, coccidioidomycosis case counts were highest during the months of September through November.
- Incidence rates were highest among older age groups. The incidence rate among 45-64 year olds was 8.4 per 100,000 population; the incidence rate among persons ages 65 years and over was 8.8 per 100,000 population.
- Incidence rates of coccidioidomycosis are highest in the southern part of the county.
- In 2016, 17% of case-patients were reported to be incarcerated.

For more information:

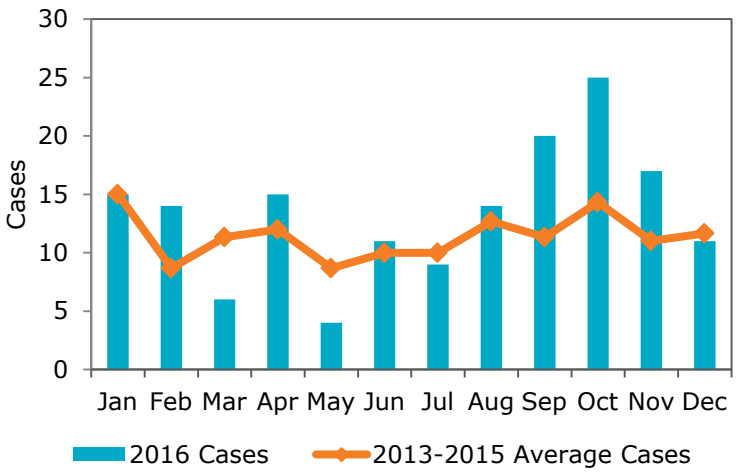
- Centers for Disease Control and Prevention (CDC) Coccidioidomycosis website
- California Department of Public Health (CDPH) Coccidioidomycosis website
- CDC/CSTE Coccidioidomycosis Case Definition

Notes:

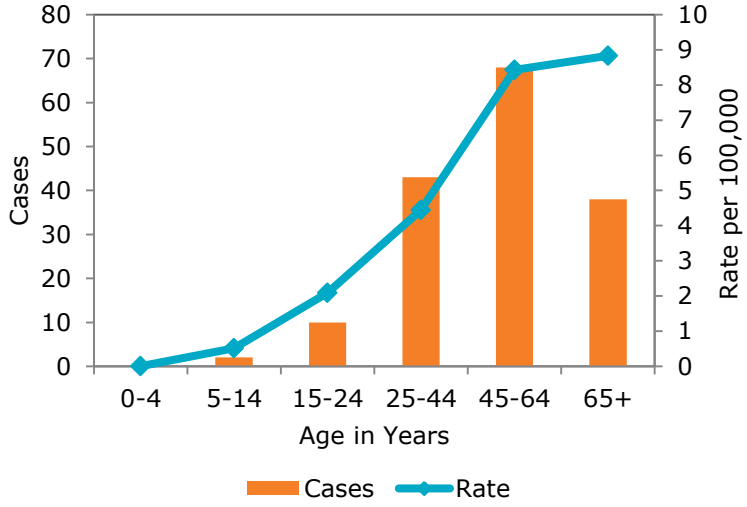
1. Counts include confirmed cases following the CDC/CSTE case criteria.
2. Coccidioidomycosis became nationally reportable in 1995.
3. Case criteria were revised in 2008, removing the requirement for a rising titer for coccidioidal immunoglobulin G results.

COCCIDIOIDOMYCOSIS

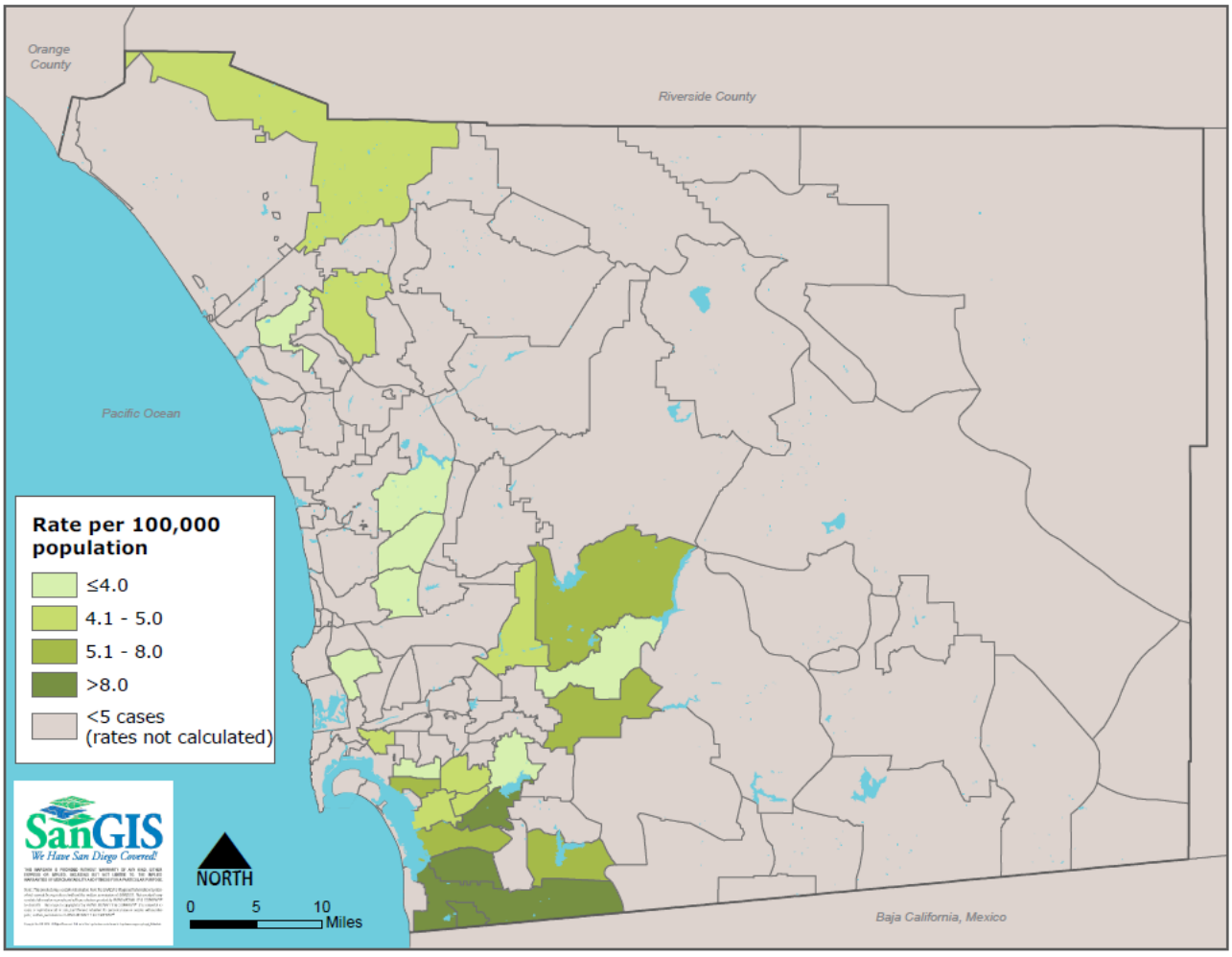
Coccidioidomycosis Cases by Month of Onset, San Diego County, 2016



Coccidioidomycosis Cases and Rates by Age, San Diego County, 2016



Coccidioidomycosis Rates by Zip Code of Residence, San Diego County, 2014-2016



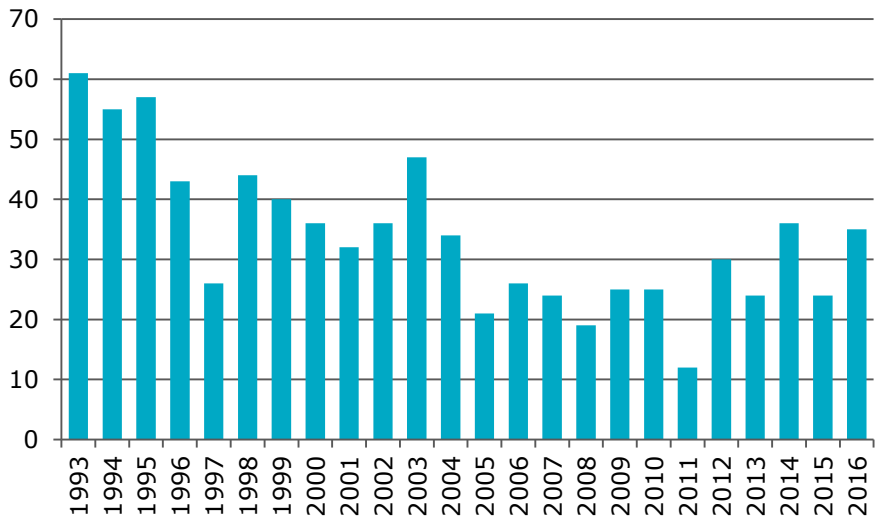
Cases indicating a detention facility as the address of residence are excluded from the calculation of rates by zip code.

CRYPTOSPORIDIOSIS

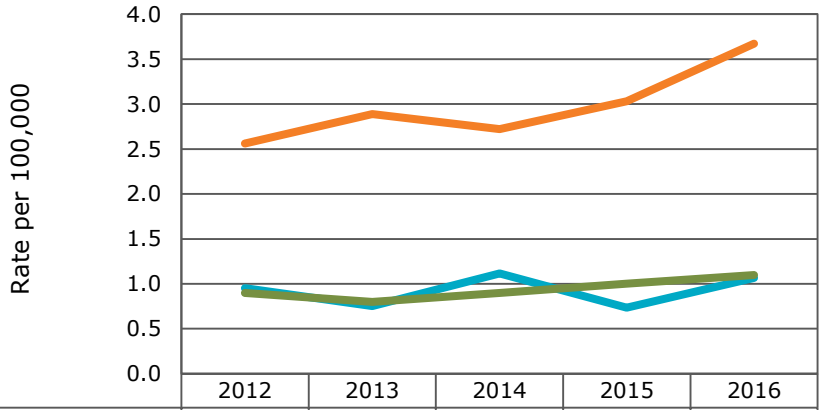
Disease Info

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 1993-2016



Cryptosporidiosis Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	1.0	0.8	1.1	0.7	1.1
California	0.9	0.8	0.9	1.0	1.1
United States	2.6	2.9	2.7	3.0	3.7

Key Points

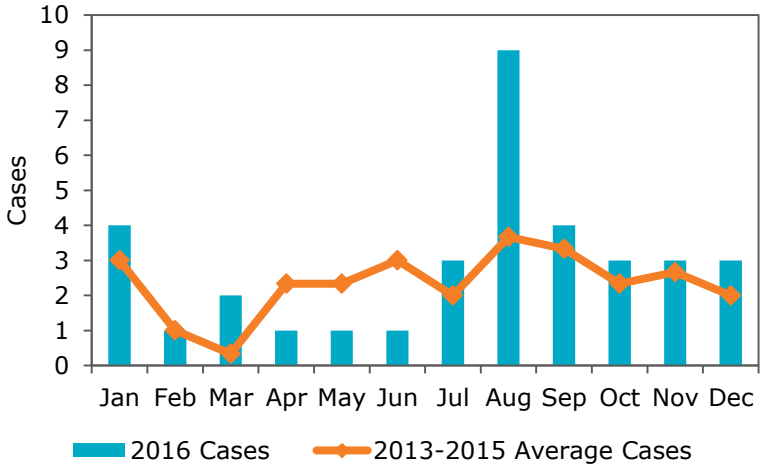
- There were 35 cases of cryptosporidiosis among San Diego County residents in 2016, 10 greater than the average of 25 cases per year over the previous 10 years.
- The national incidence rate of cryptosporidiosis increased to 3.7 per 100,000 population in 2016 and remains consistently higher than incidence rates in California and San Diego County, which have been close to 1.0 per 100,000 over the past five years.
- Although there was a peak in San Diego County cases during August 2016, there was no distinct seasonal pattern over the previous three years.
- Although the highest cryptosporidiosis case count in 2016 was among 45-64 year olds, the rate was highest among children under the age of five (2.3 per 100,000).
- Most San Diego County residents infected with cryptosporidiosis in 2016 were symptomatic (94%) and most had diarrhea (91%). Other common symptoms, reported by 75% of case-patients, were abdominal pain and nausea.
- Thirty percent of cases were immune compromised and nearly 50% were hospitalized. Those who were immune compromised were more likely to be hospitalized—88% compared to 19% of the immunocompetent.

For more information:

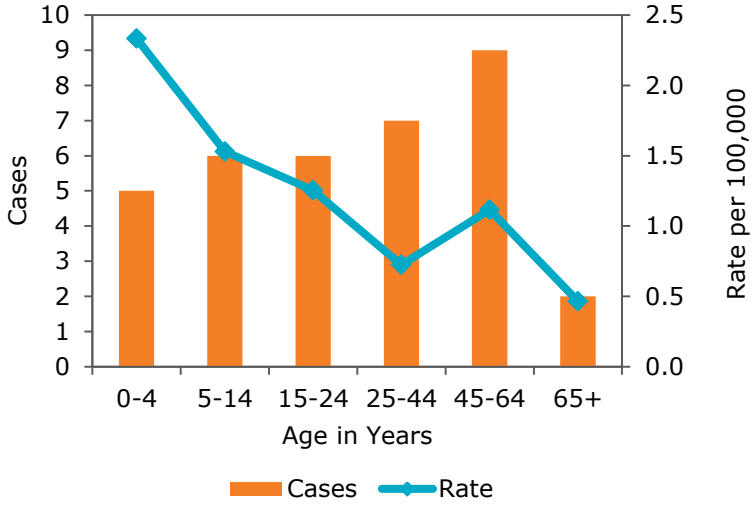
- Centers for Disease Control and Prevention (CDC) Cryptosporidiosis website
- CDC Healthy Water website
- CDC Health Information for International Travel (the Yellow Book) – Cryptosporidiosis
- CDC/CSTE Cryptosporidiosis Case Definition
- California Department of Public Health (CDPH) Cryptosporidiosis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

CRYPTOSPORIDIOSIS

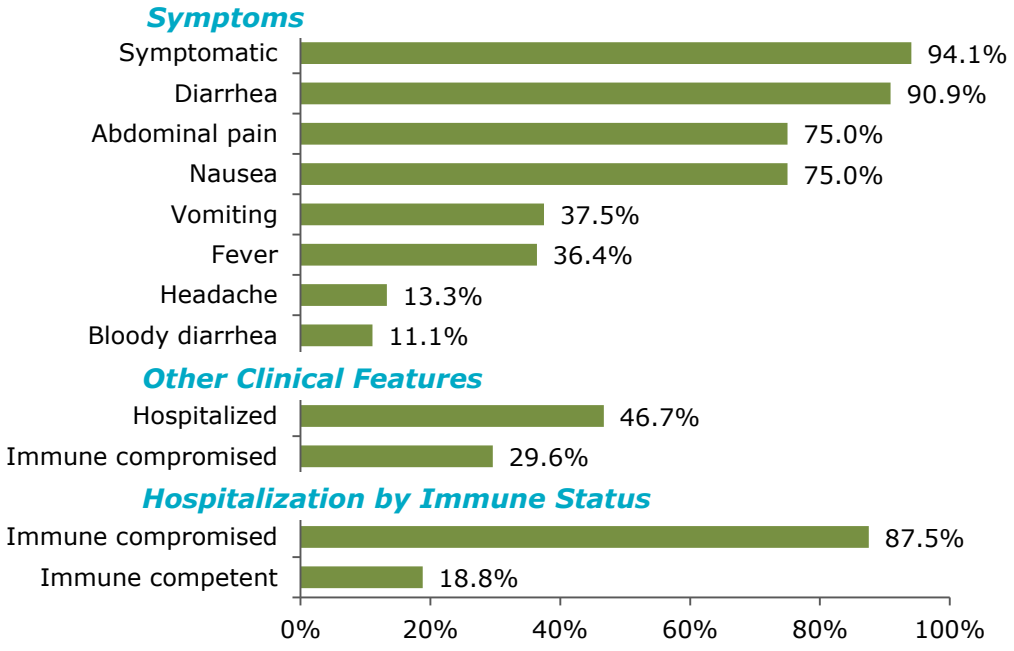
Cryptosporidiosis Cases by Month of Onset, San Diego County, 2016



Cryptosporidiosis Cases and Rates by Age, San Diego County, 2016



Clinical Characteristics Reported by Cryptosporidiosis Cases, San Diego County, 2016



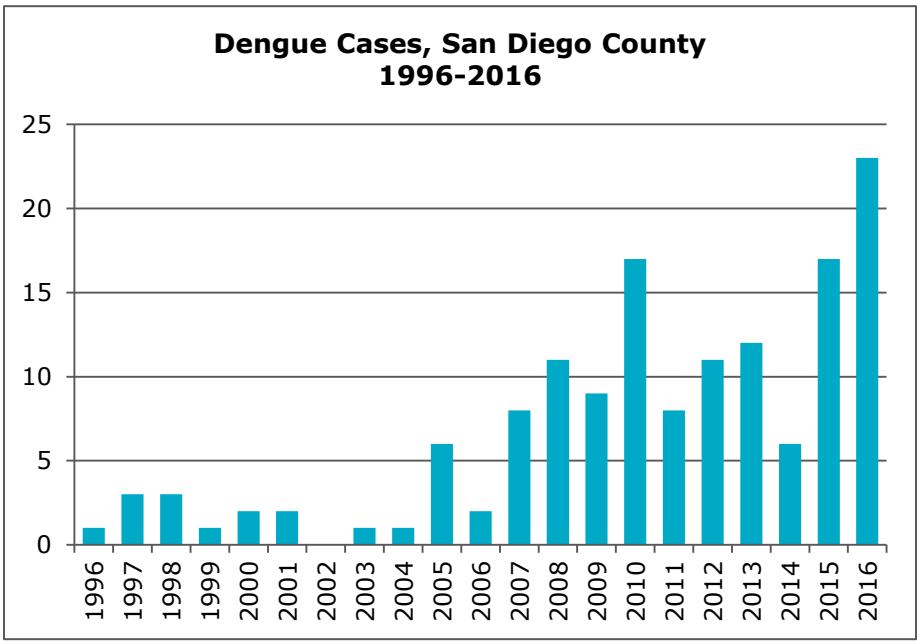
Notes:

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 characteristics calculations are cases with available information, ranging from 27-34 of total cases. The exception is hospitalization by immune status percentages, which use different denominators; 24 cases had complete information for both hospitalization and immune status.

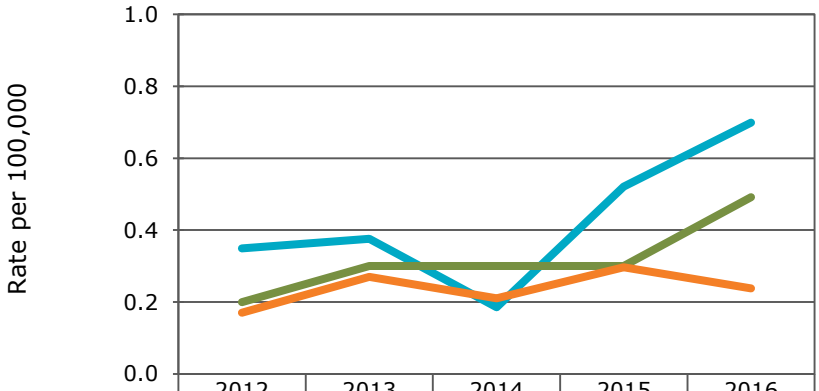
DENGUE VIRUS INFECTION

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 Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	0.3	0.4	0.2	0.5	0.7
California	0.2	0.3	0.3	0.3	0.5
United States	0.2	0.3	0.2	0.3	0.2

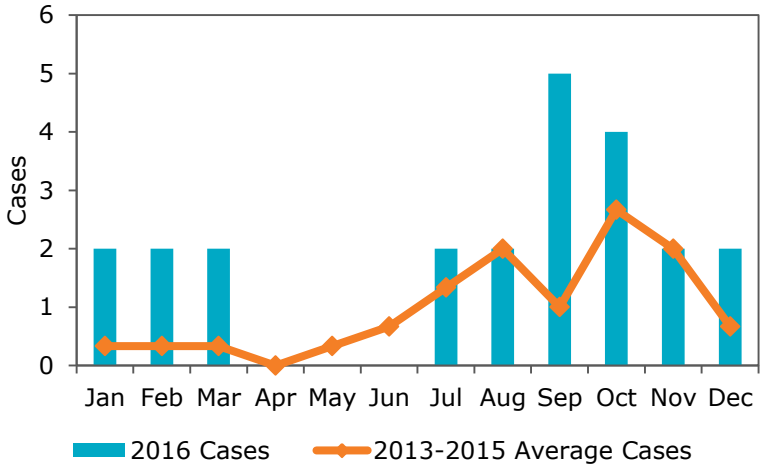
Key Points

- There were 23 cases of dengue virus infection among San Diego County residents in 2016, more than double the average of 10.8 cases over the previous five years. The increase may be a result of additional testing due to awareness and concern about Zika virus infection.
- The incidence rate of dengue among San Diego County residents increased from 0.3 to 0.7 per 100,000 population between 2012 and 2016. California saw a similar, though attenuated, trend, while dengue incidence in the United States remained relatively stable.
- Dengue is not endemic in San Diego County. Although invasive *Aedes* mosquitos have recently been detected in the county, all 23 cases in 2016 were acquired during travel to Africa, Asia and the Pacific, or Latin America and the Caribbean.
- In recent years, more San Diego County cases have been reported in the late summer and early fall.
- All 2016 dengue cases were in adults, with the highest number and highest rate among those aged 25-44 years.
- The most common symptoms, reported by over 60% of San Diego County case-patients, were fever, headache, muscle pain, and diarrhea.

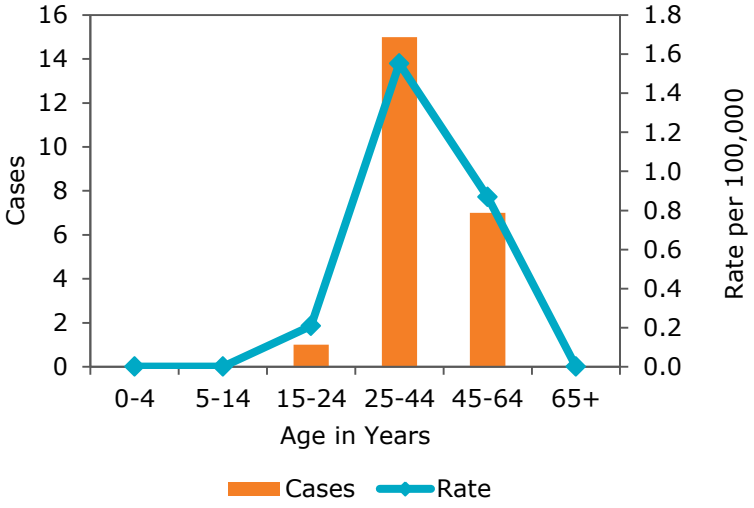
Female *Aedes aegypti* mosquito
Photo credit: CDC/James Gatheny, Public Health Image Library

DENGUE VIRUS INFECTION

Dengue Cases by Month of Onset, San Diego County, 2016



Dengue Cases and Rates by Age, San Diego County, 2016



Select Characteristics of Dengue Cases, San Diego County, 2016

Characteristic	Cases	Percent
Symptoms		
Fever (and/or sweats/chills)	22	95.7
Headache	17	73.9
Eye pain	12	52.2
Joint pain	12	52.2
Muscle pain	15	65.2
Nausea or vomiting	10	43.5
Diarrhea	6	26.1
Abdominal pain	7	30.4
Rash	11	47.8
Hospitalized	4	17.4
Travel location		
Africa	1	4.3
Asia/Pacific	12	52.2
Latin America/Caribbean	10	43.5

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 23 cases; 23 is the denominator for these calculations.
5. Information on dengue serotype was not available for most cases.

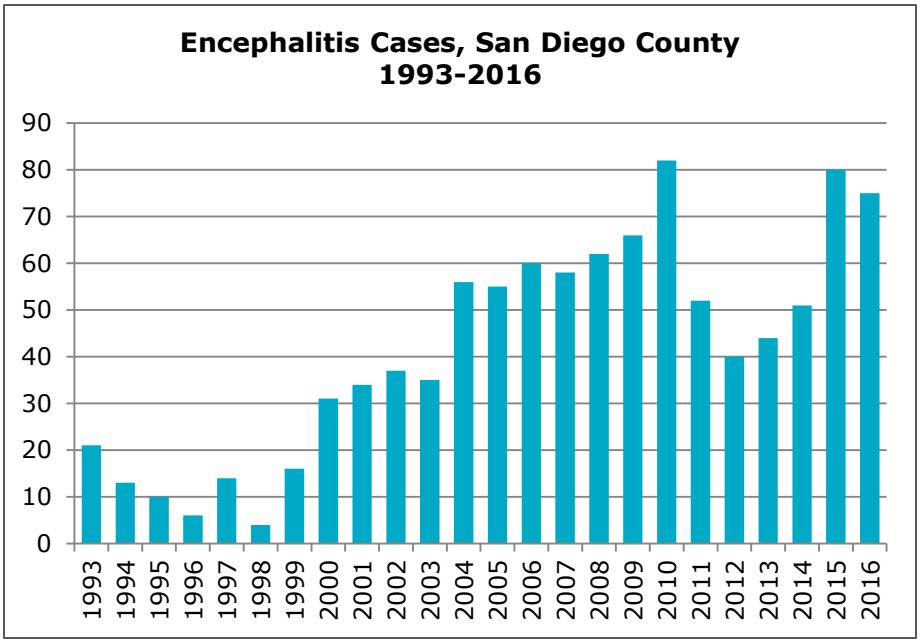
For more information:

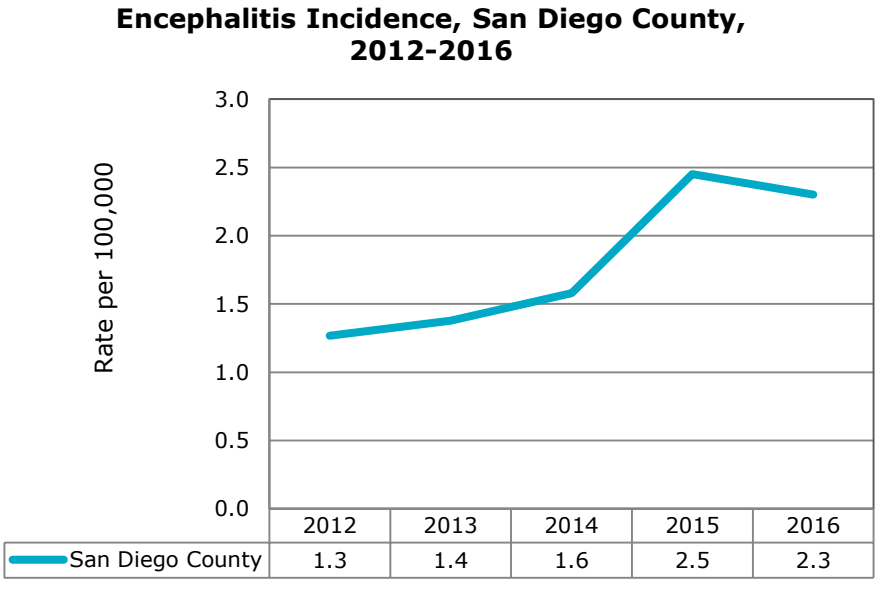
- Centers for Disease Control and Prevention (CDC) Dengue website
- CDC Health Information for International Travel (the Yellow Book) – Dengue
- CDC/CSTE Dengue Case Definition
- California Department of Public Health (CDPH) Dengue website
- CDPH Aedes Aegypti and Aedes Albopictus Mosquitos website
-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

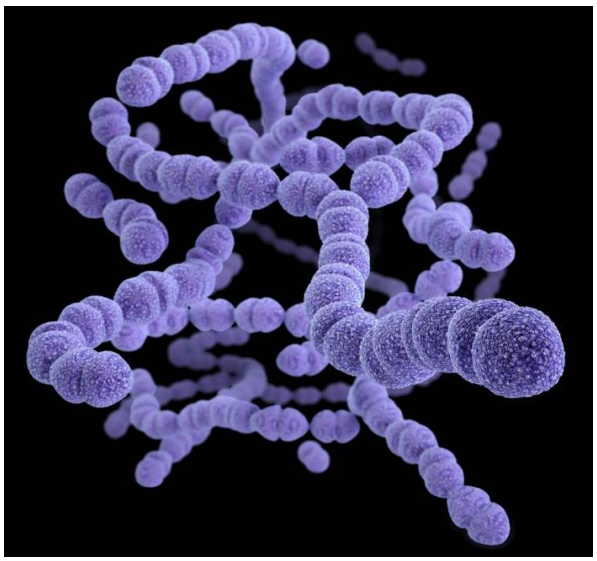




US and CA incidence data are not available. Encephalitis is not nationally reportable.

Key Points

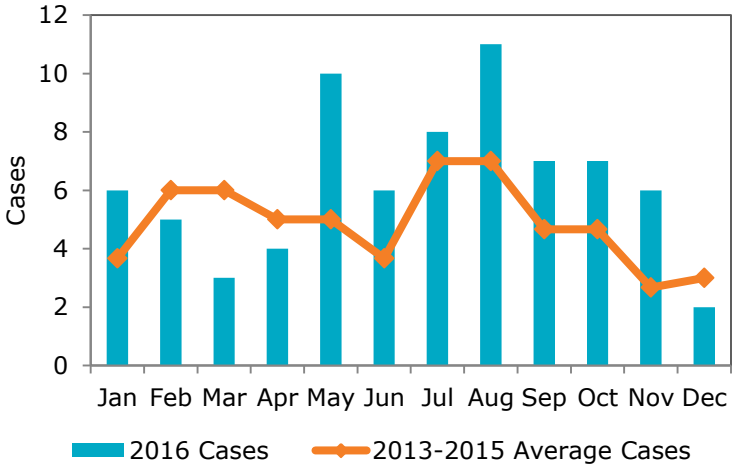
- In 2016, 75 cases of encephalitis were reported among residents of San Diego County. While case counts decreased by six percent in 2016 compared to the previous year, counts were higher than those reported in 2011 through 2014.
- In San Diego County, the incidence rate of encephalitis was 2.3 per 100,000 population.
- In 2016, a seasonal trend for encephalitis cases was not observed, though case counts for encephalitis in San Diego County peaked during the months of May and August.
- The majority of case-patients (72%) were ages 45 years and over. Incidence rates were highest among those ages 65 years and older (6.7 per 100,000).
- Approximately half of the cases in 2016 (47%), did not have a causative agent identified. Among those with known etiology, most (22 cases) were due to a viral infection (e.g., enteroviruses, herpes simplex viruses, and varicella zoster virus).



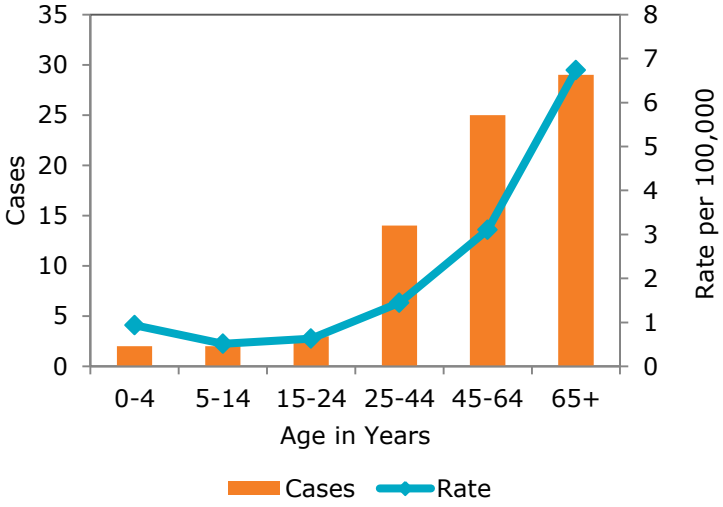
3D computer-generated image of a cluster of sphere-shaped drug-resistant *Streptococcus pneumoniae* bacteria. *S. pneumoniae* can be observed in pairs (diplococci), singularly or in short chains. Pneumococcal infections can lead to bacterial encephalitis, and accounted for two cases in San Diego County in 2016.
Photo credit: CDC/ James Archer, Public Health Image Library

ENCEPHALITIS

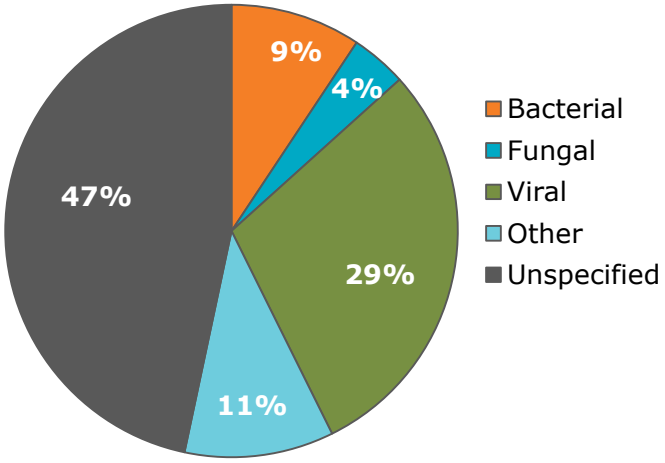
Encephalitis Cases by Month of Onset, San Diego County, 2016



Encephalitis Cases and Rates by Age, San Diego County, 2016



Encephalitis Cases by Etiology, San Diego County, 2016



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:

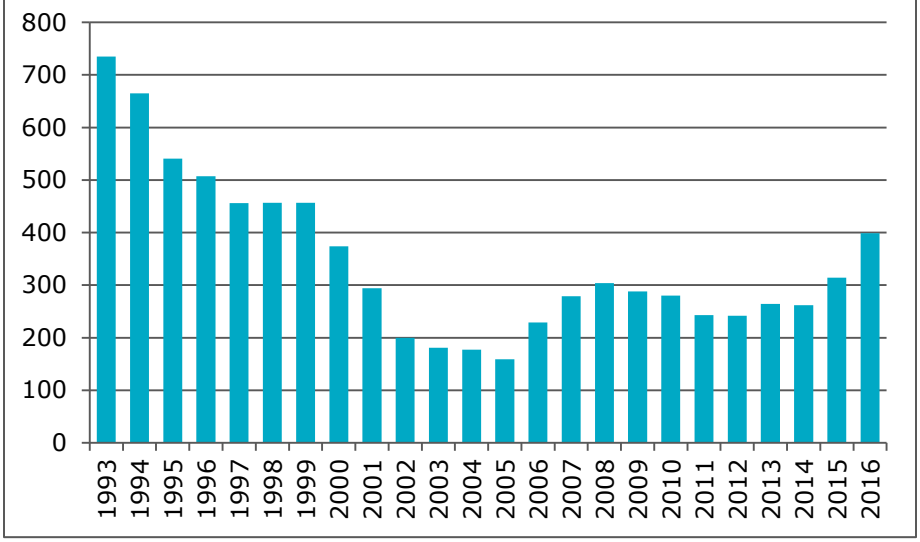
- Centers for Disease Control and Prevention (CDC) Tick-borne Encephalitis website
- CDC Eastern Equine Encephalitis website
- CDC Japanese Encephalitis website
- CDC La Crosse Encephalitis website
- CDC Saint Louis Encephalitis website
- California Department of Public Health (CDPH) Saint Louis Encephalitis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

GIARDIASIS

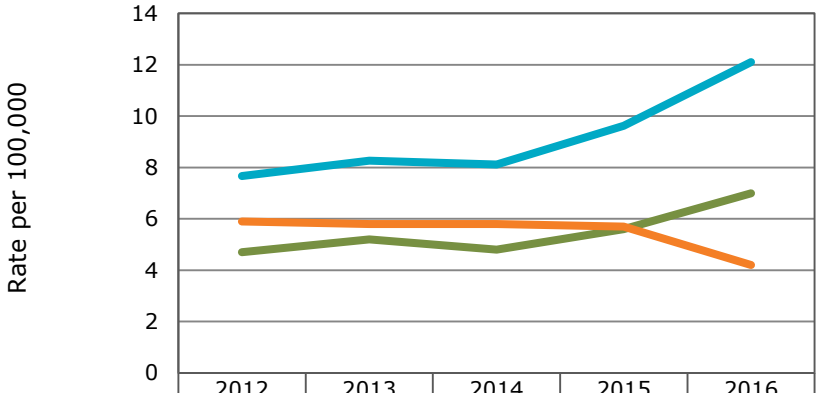
Disease Info

Infectious agent: *Giardia,* including *Giardia intestinalis, Giardia lamblia*, and *Giardia duodenalis*, parasites
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 1993-2016



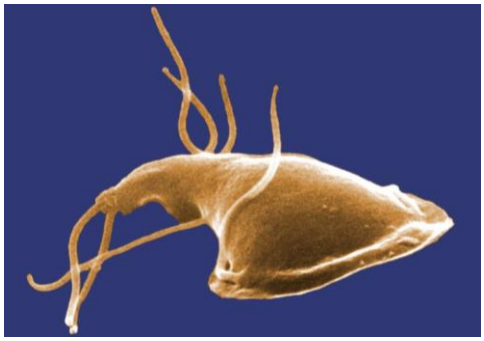
Giardiasis Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	7.7	8.3	8.1	9.6	12.1
California	4.7	5.2	4.8	5.6	7.0
United States	5.9	5.8	5.8	5.7	4.2

Key Points

- In 2016, there were 399 cases of giardiasis in San Diego County. This is an increase of 27% compared to the previous year (314 cases).
- The incidence rate of giardiasis in 2016 was higher in San Diego County (12.1 per 100,000) than in California (7.0 per 100,000) and the United States (4.2 per 100,000).
- A County-sponsored refugee health screening program began reporting cases of giardiasis in mid-2006. In 2016, 38% of cases reported in San Diego County were among refugees.
- In 2016, as in previous years, a rise in case counts was observed in the summer months. However, a peak in cases was noted in November of 2016.
- In San Diego County, while case counts were highest among 25-44 year olds, rates were highest among children aged four years and under.
- Rates of giardiasis were highest among residents of the Central and East HHSA Regions of San Diego County.



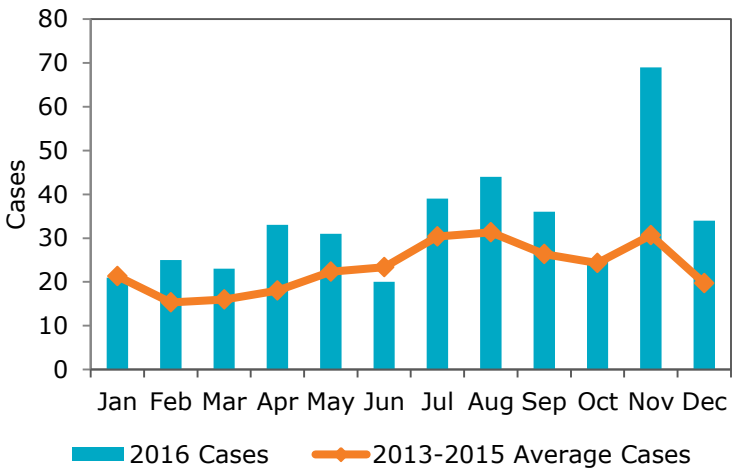
Scanning electron microscopic (SEM) image depicting the dorsal (upper) surface of a *Giardia* protozoan. Photo credit: Dr. Stan Erlandsen, Dr. Dennis Feely, Public Health Image Library

For more information:

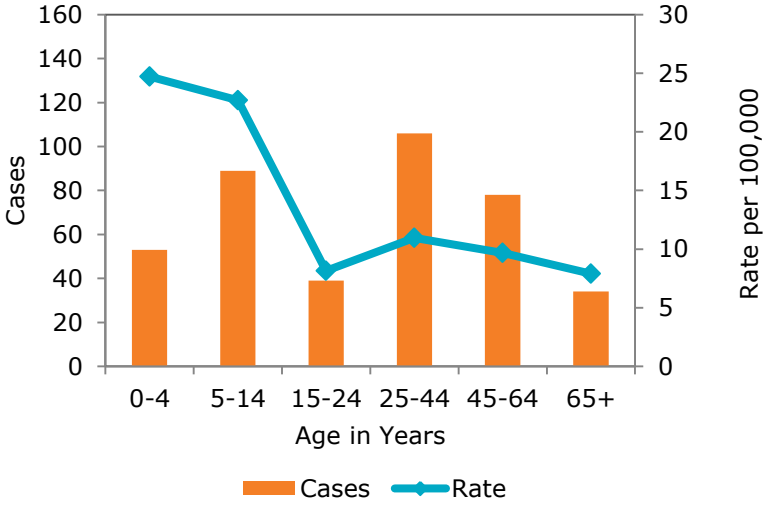
- Centers for Disease Control and Prevention (CDC) *Giardia* website
- CDC Health Information for International Travel (the Yellow Book) – Giardiasis
- California Department of Public Health (CDPH) Giardiasis website
- CDC/CSTE Giardiasis Case Definition

GIARDIASIS

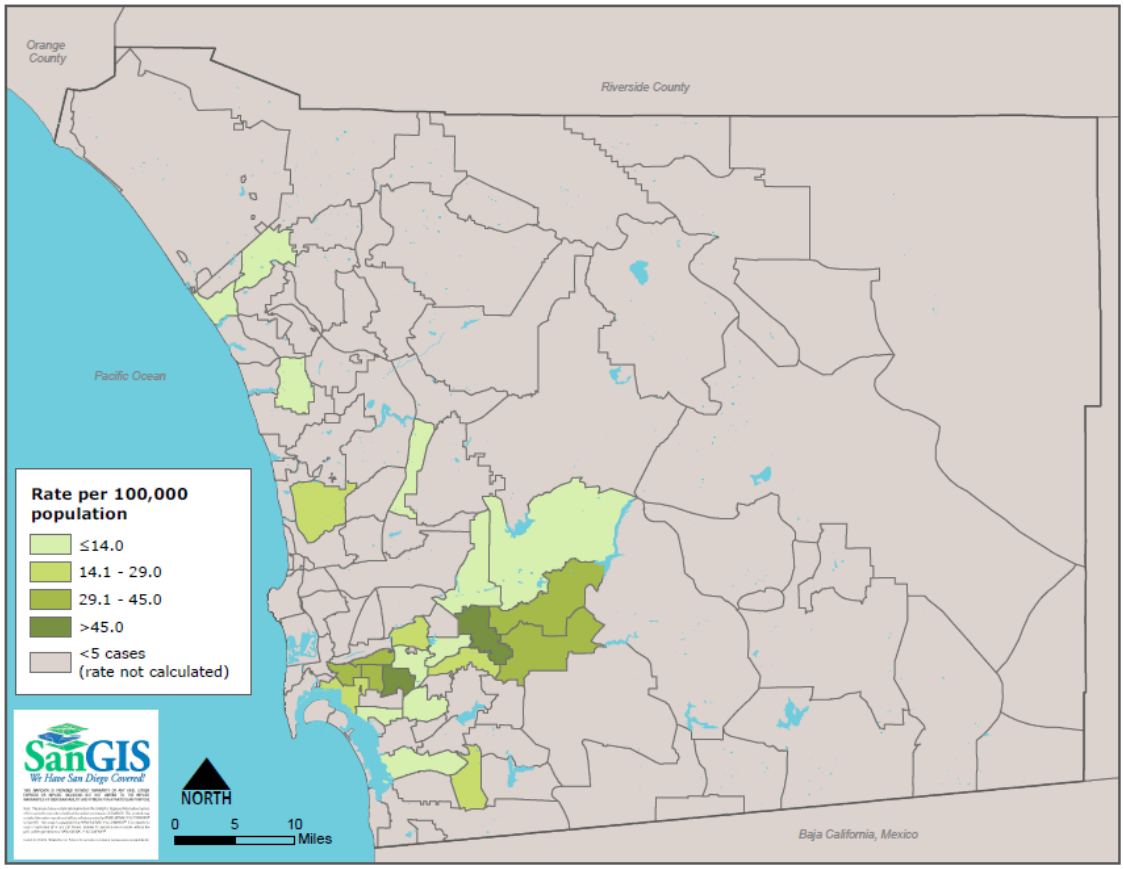
Giardiasis Cases by Month of Onset, San Diego County, 2016



Giardiasis Cases and Rates by Age, San Diego County, 2016



Giardiasis Rates by Zip Code of Residence, San Diego County, 2016



Notes:

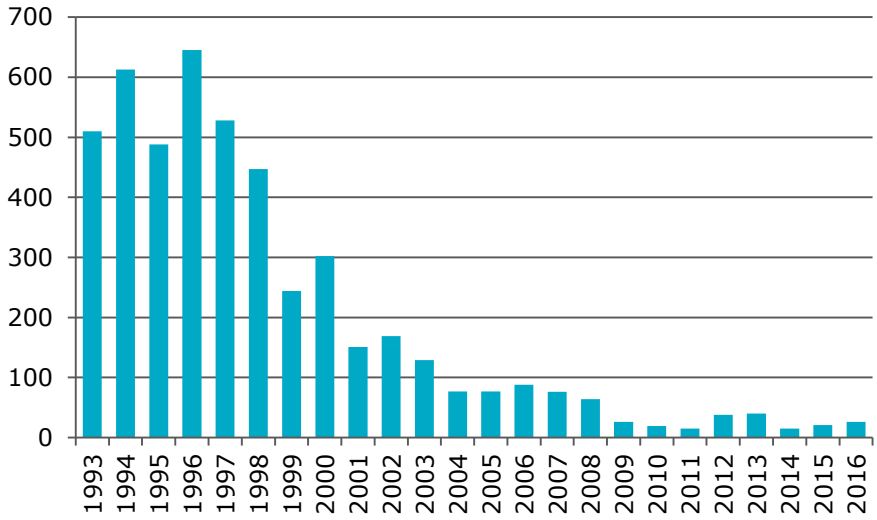
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Giardiasis became nationally notifiable in 2002.

HEPATITIS A

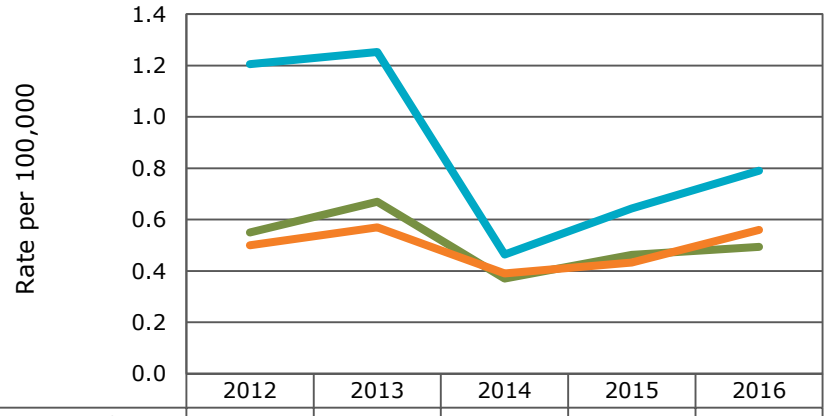
Disease Info

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 1993-2016



Hepatitis A Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	1.2	1.3	0.5	0.6	0.8
California	0.6	0.7	0.4	0.5	0.5
United States	0.5	0.6	0.4	0.4	0.6

Key Points

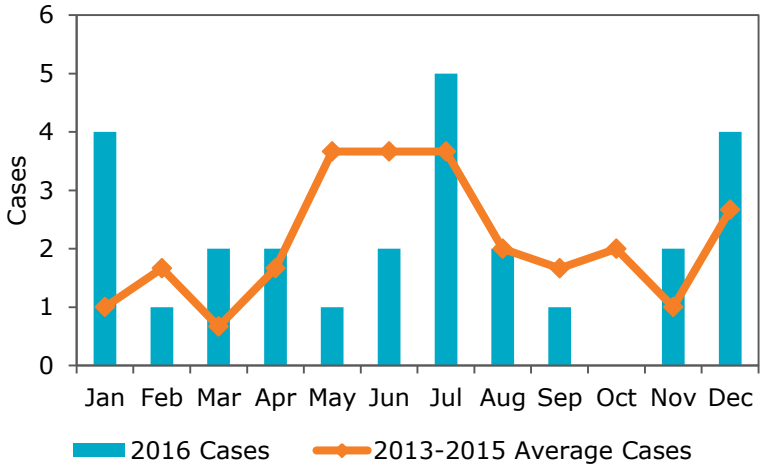
- There were 26 cases of hepatitis A among San Diego County residents in 2016. Counts dropped rapidly after the introduction of the vaccine in 1995 and a policy of routine vaccination of children in California began in 1999.
- A nationwide outbreak of hepatitis A associated with a frozen berry mix contributed to higher incidence in 2013. San Diego County incidence, consistently higher than California and United States incidence, was 1.3 per 100,000 population in 2013 compared to 0.8 per 100,000 population in 2016.
- There has been no distinct seasonal pattern in San Diego County hepatitis A cases in recent years.
- Since children are routinely vaccinated against hepatitis A, most cases are now in adults; in 2016, the highest counts and rates were among adults aged 25-64 years.
- The most common symptoms, reported by at least two-thirds of San Diego County case-patients in 2016, were jaundice, abdominal pain, dark urine, loss of appetite, and fatigue.
- Since hepatitis A vaccination has become widespread in the United States, most cases have been associated with international travel, as were nearly 60% of San Diego County cases in 2016.

For more information:

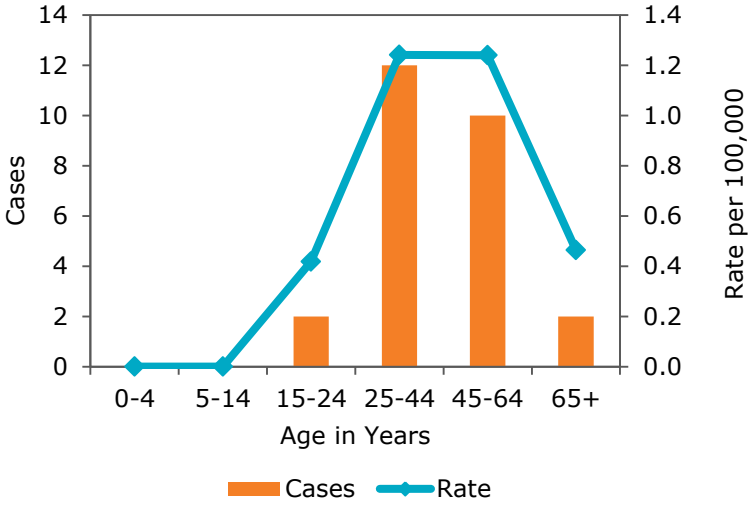
- Centers for Disease Control and Prevention (CDC) Hepatitis A website
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book) – Hepatitis A
- CDC Health Information for International Travel (the Yellow Book) – Hepatitis A
- CDC/CSTE Hepatitis A Case Definition
- California Department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

HEPATITIS A

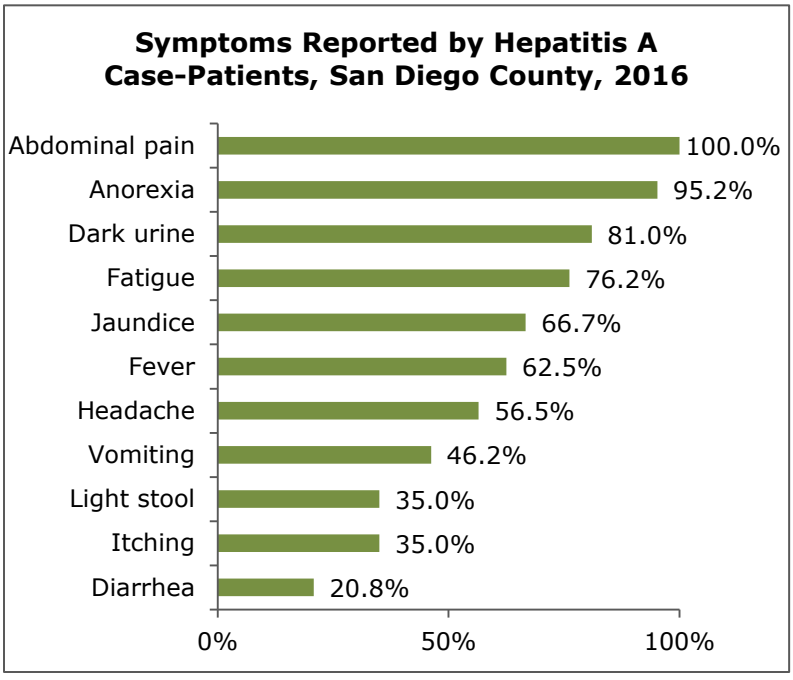
Hepatitis A Cases by Month of Onset, San Diego County, 2016



Hepatitis A Cases and Rates by Age, San Diego County, 2016



Symptoms Reported by Hepatitis A Case-Patients, San Diego County, 2016



73% HOSPITALIZED 2016

Select Risk Factors Reported by Hepatitis A Case-Patients, San Diego County, 2016

Risk Factor	Cases	Percent
International travel	12	57.1
Drug use	7	33.3
Recreational water	4	20.0
Homelessness	3	14.3
MSM	1	3.9

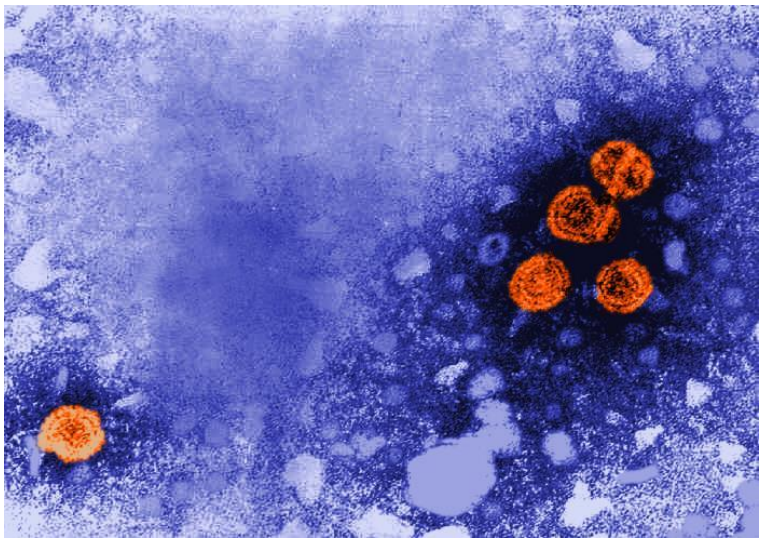
Notes:

1. Counts include confirmed cases following the CDC/CSTE case criteria.
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 16-26 of 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. Recreational water refers to participation in aquatic activities such as surfing or swimming in the ocean, water parks, etc.
6. A large outbreak of hepatitis A in San Diego County began in late 2016, continuing through 2017; other than a few cases from late 2016, data related to the outbreak are not included in this report.

HEPATITIS B

Disease Info

Infectious agent: Hepatitis B virus, a member of the family Hepadenaviridae
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 2016, there were three cases reported, a decrease of 97%.
- In recent years, incidence rates of acute hepatitis B in San Diego County were low and are comparable to rates for California. In 2016, the incidence in San Diego County was 0.1 per 100,000 population.
- All three cases of acute hepatitis B in 2016 were among adults aged 45-64 years.

Chronic Hepatitis B

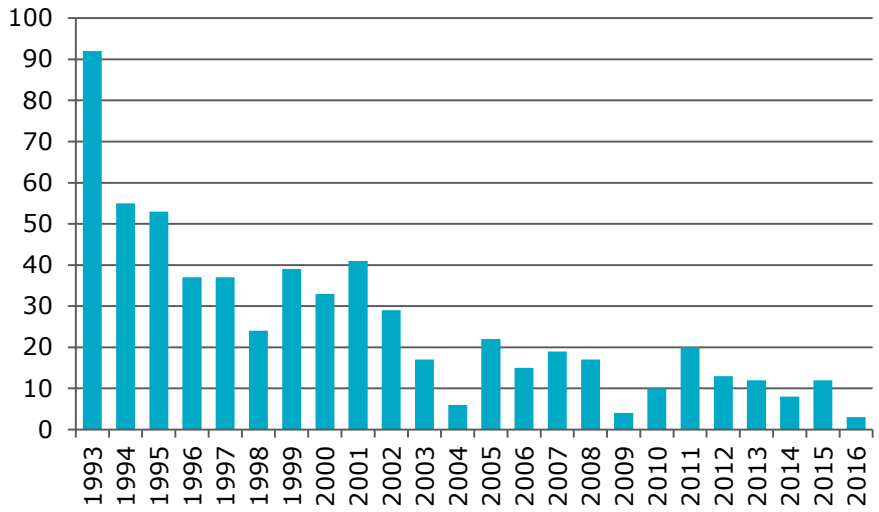
- In 2016, there were 872 cases of chronic hepatitis B reported among residents of San Diego County.
- The greatest number of newly reported cases in 2016 was in persons between the ages of 25-44 years (358 cases), followed by persons age 45-64 years (333 cases).
- Rates of newly reported cases were highest in the Central and North Central HHSA Regions of San Diego County.

For more information:

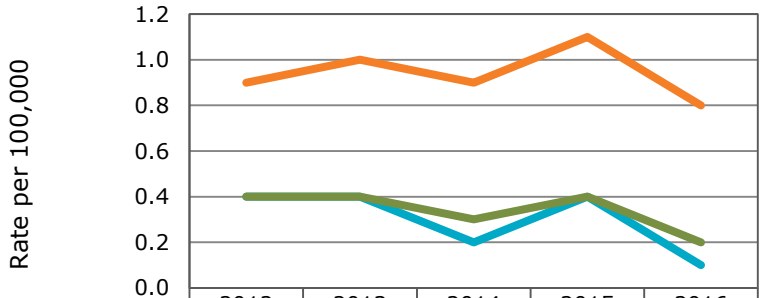
- Centers for Disease Control and Prevention (CDC) Hepatitis B website
- California Department of Public Health (CDPH) Hepatitis B website
- CDC/CSTE Acute Hepatitis B Case Definition
- CDC/CSTE Chronic Hepatitis B Case Definition
- CDC/CSTE Perinatal Hepatitis B Virus Infection Case Definition
- Epidemiology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

HEPATITIS B, ACUTE

Acute Hepatitis B Cases, San Diego County, 1993-2016



Acute Hepatitis B Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	0.4	0.4	0.2	0.4	0.1
California	0.4	0.4	0.3	0.4	0.2
United States	0.9	1.0	0.9	1.1	0.8

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 c-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. Case management of mothers who test positive for HBV surface antigen as well as their infants.
3. Postexposure immunoprophylaxis for infants born to HBV-infected mothers.
4. Routine vaccination of all infants with the HBV vaccine series, starting with the first dose at birth.

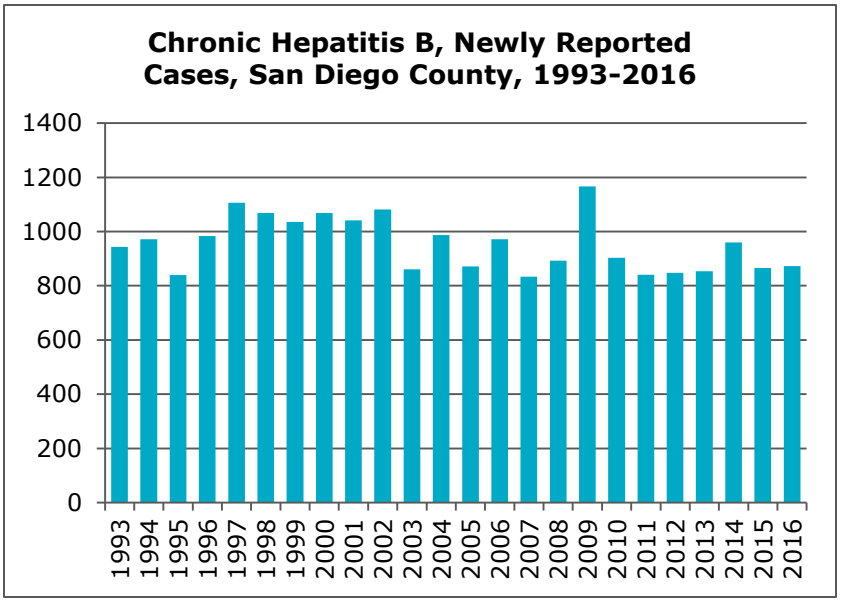
In 2016, two cases of perinatal HBV infection were reported in San Diego County. Nationally, 24 cases of perinatal infection were reported.

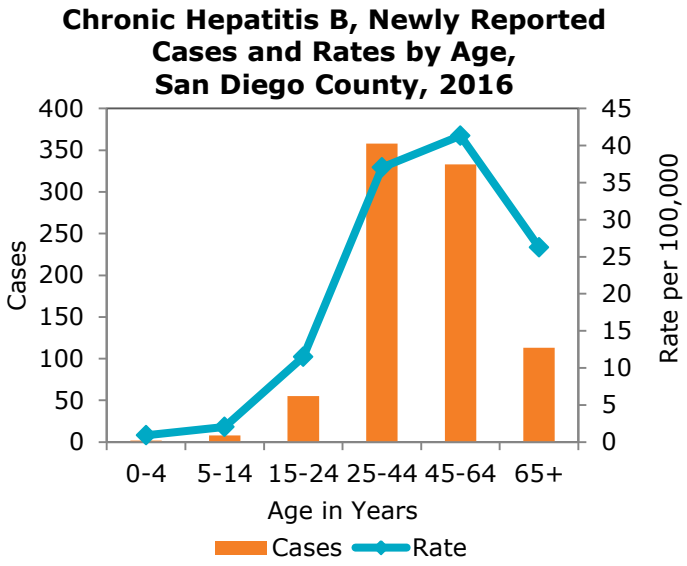
More information on perinatal hepatitis B guidelines and resources can be found on the Centers for Disease Control and Prevention Perinatal Transmission webpage.

Notes:

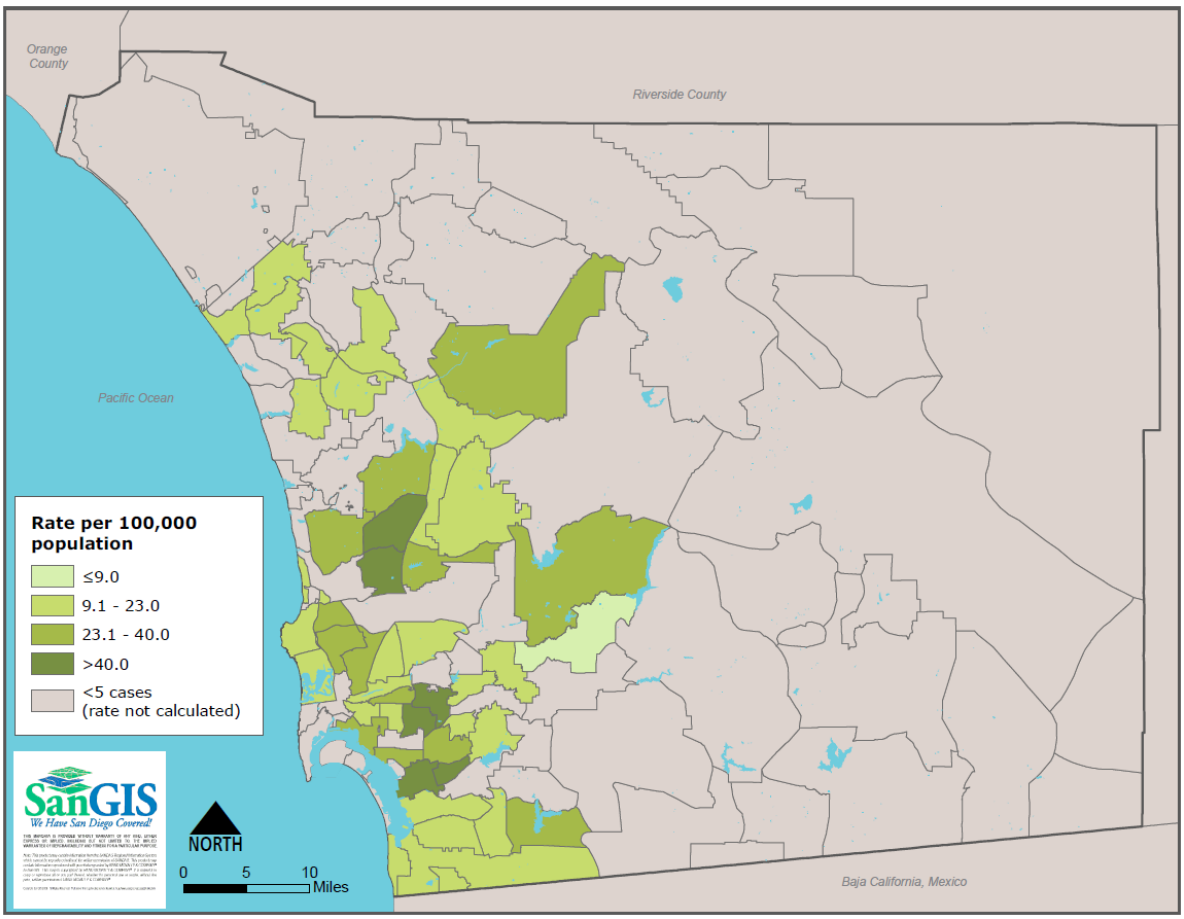
1. Acute hepatitis B case counts include confirmed cases following the CDC/CSTE case criteria. In 2012, the case definition was changed, eliminating the requirement of acute clinical presentation for patients with a negative hepatitis B surface antigen laboratory test within six months prior to a positive 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. 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, 2016



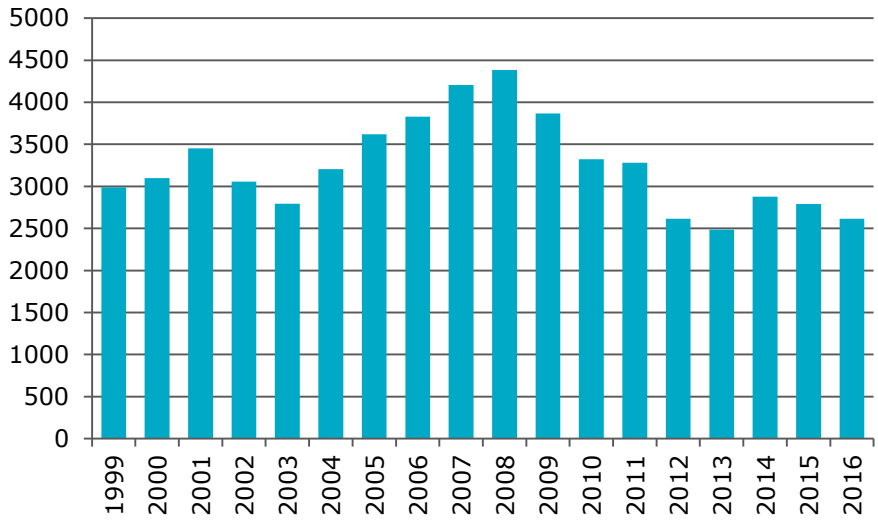
Cases indicating a detention facility as the address of residence are excluded from the calculation of rates by zip code.

HEPATITIS C, CHRONIC

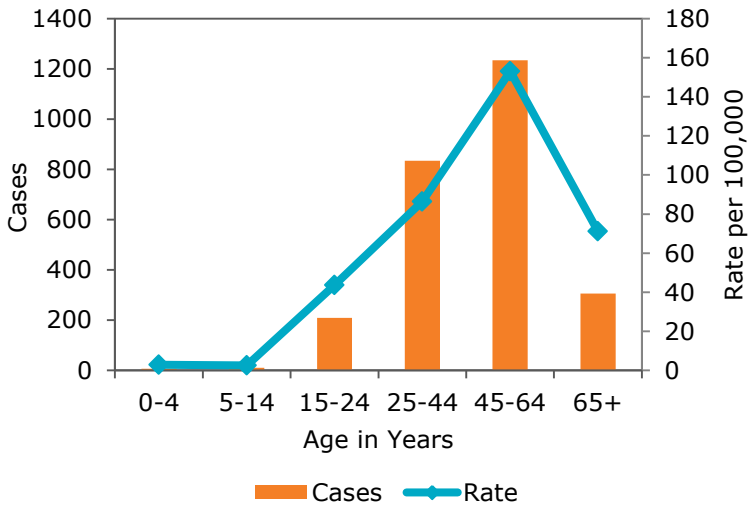
Disease Info

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 infections are asymptomatic, but many people with chronic hepatitis C develop chronic liver disease, including cirrhosis and cancer. 75-85% of acute cases become chronic. 20-30% of acute infections cause jaundice, abdominal pain, fatigue, or poor appetite.

Chronic Hepatitis C, Newly Reported Cases, San Diego County, 1999-2016



Chronic Hepatitis C, Newly Reported Cases and Rates by Age, San Diego County, 2016



Key Points

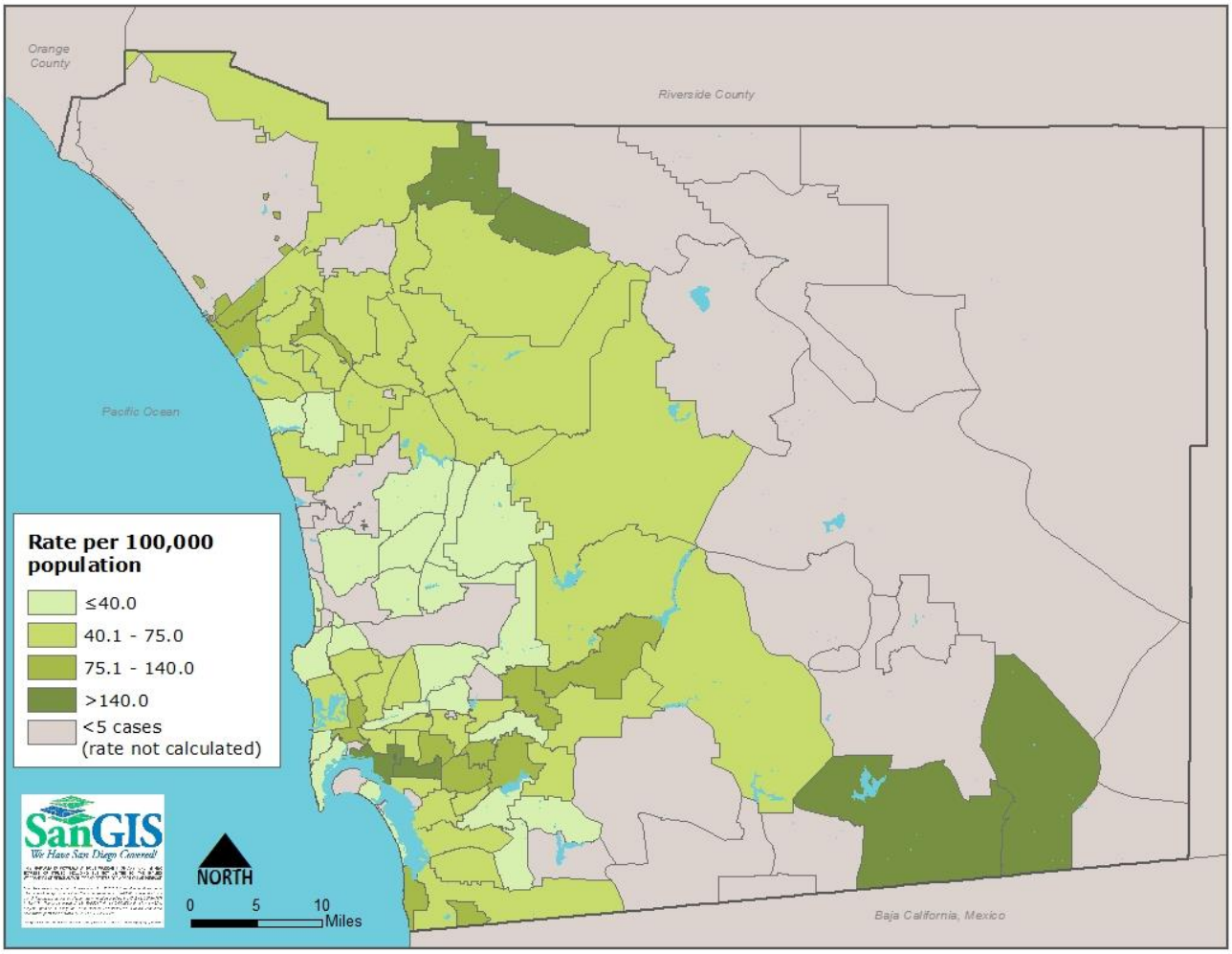
- There were 2,616 newly reported cases of chronic hepatitis C in San Diego County in 2016, similar to the average of 2,800 cases over the previous five years and down from the peak of over 4,000 cases in 2007-2008.
- The rate of newly reported cases of chronic hepatitis C among San Diego County residents has ranged from 77.8-89.1 per 100,000 population between 2012 and 2016.
- In 2016, both the number of cases (1,234) of chronic hepatitis C and the rate of newly reported cases (153.1 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 in central San Diego County. 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, 2016



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:

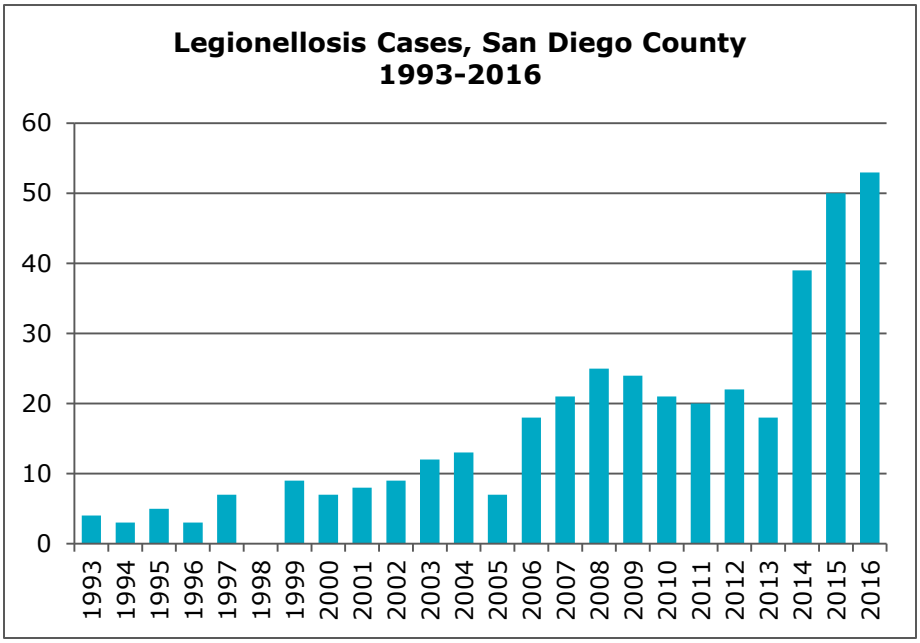
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Chronic hepatitis C became nationally notifiable in 2003. Over the past 14 years, it has alternately been referred to as Hepatitis C, Past or Present and Hepatitis C, Chronic, with varying case definitions. The term 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 not be considered incident or 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 may differ from counts published by the California Department of Public Health (CDPH). CDPH obtains data from other sources, including the correctional system, and also 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

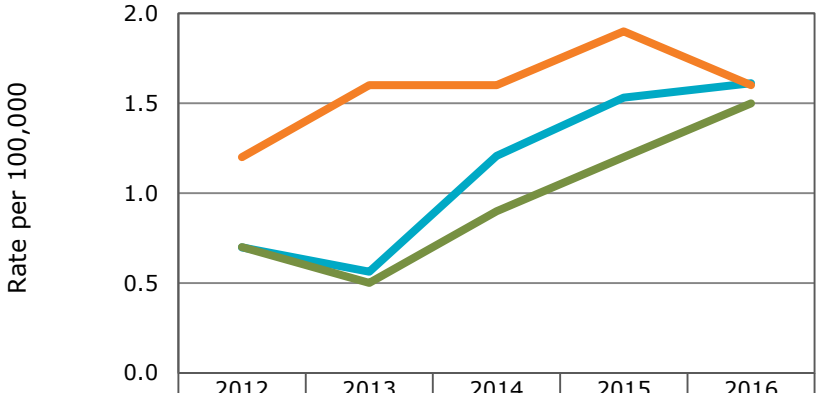
Disease Info

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 similar to 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 1993-2016



Legionellosis Incidence, San Diego County, California, and United States, 2012-2016

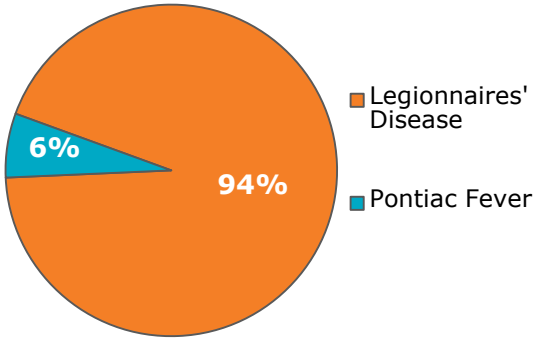


	2012	2013	2014	2015	2016
San Diego County	0.7	0.6	1.2	1.5	1.6
California	0.7	0.5	0.9	1.2	1.5
United States	1.2	1.6	1.6	1.9	1.6

Key Points

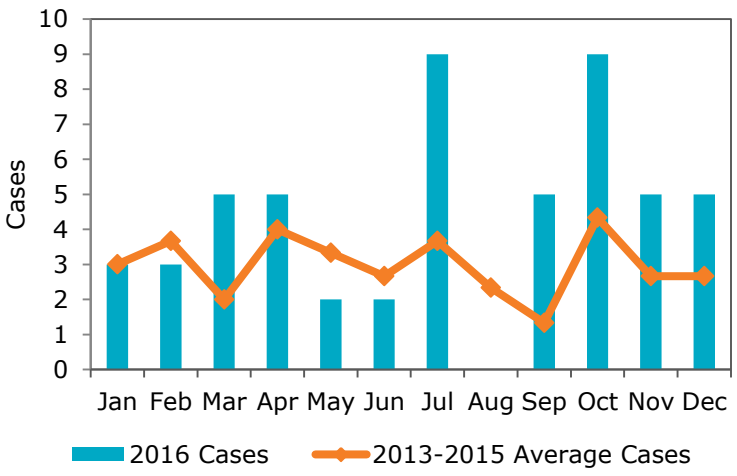
- In 2016, there were 53 cases of legionellosis in San Diego County. This is an increase of 36% compared to 2014 (39 cases) and a 112% increase compared to 2008 (25 cases). The increase in cases most likely can be attributed to increased testing by providers.
- The incidence rate of legionellosis in San Diego County (1.6 per 100,000) was comparable to that of California and the United States in 2016. In prior years, national rates were higher than those for California and San Diego County.
- In 2016, the majority of legionellosis case-patients were diagnosed with Legionnaires' Disease (94%). Pontiac Fever is infrequently diagnosed due to mild symptoms.
- Case counts were highest in the months of July and October in 2016.
- The majority of cases, and the highest rates, were seen among older adults. A total of 28 cases were among persons ages 65 years and over (incidence rate of 6.5 per 100,000).
- Most cases (72%) were community-acquired. Seventeen percent of cases were possibly travel-associated.
- In 2016, the case-fatality rate among legionellosis cases in San Diego County was 6.5%.

Legionellosis Cases by Disease Classification, San Diego County, 2016

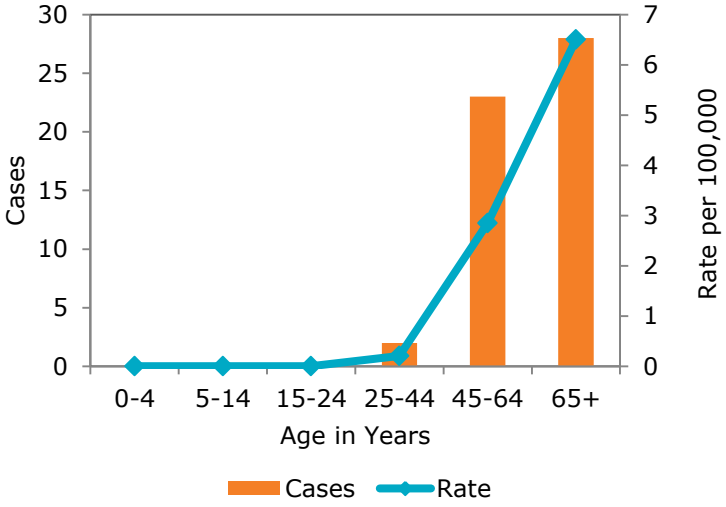


LEGIONELLOSIS

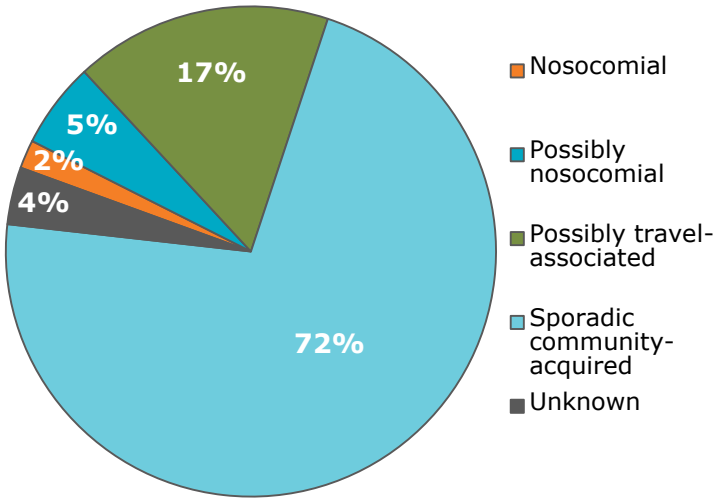
Legionellosis Cases by Month of Onset, San Diego County, 2016



Legionellosis Cases and Rates by Age, San Diego County, 2016



Legionellosis Cases by Transmission Type, San Diego County, 2016



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 same 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 rates calculations are cases with available information, ranging from 46-48 of total cases.

For more information:

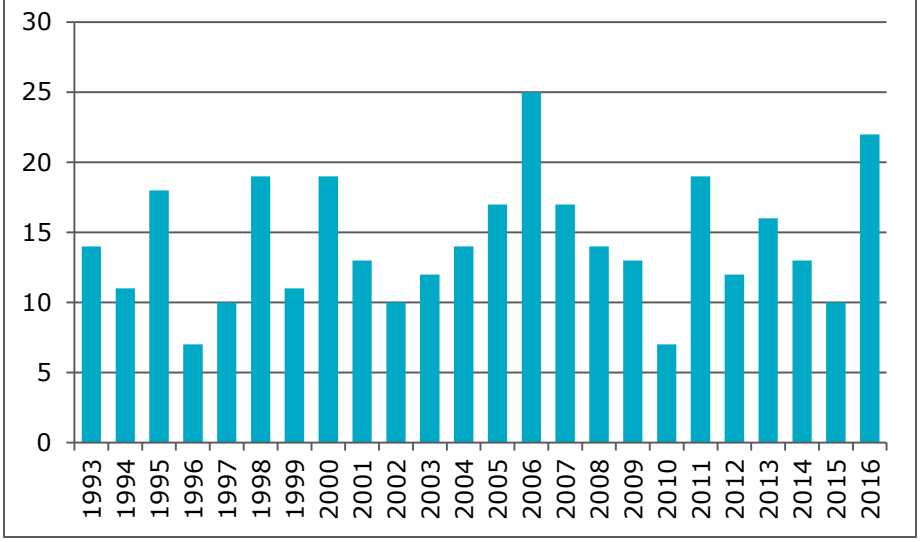
- Centers for Disease Control and Prevention (CDC) *Legionella* website
- California Department of Public Health (CDPH) Legionellosis website
- CDC/CSTE Legionellosis Case Definition

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

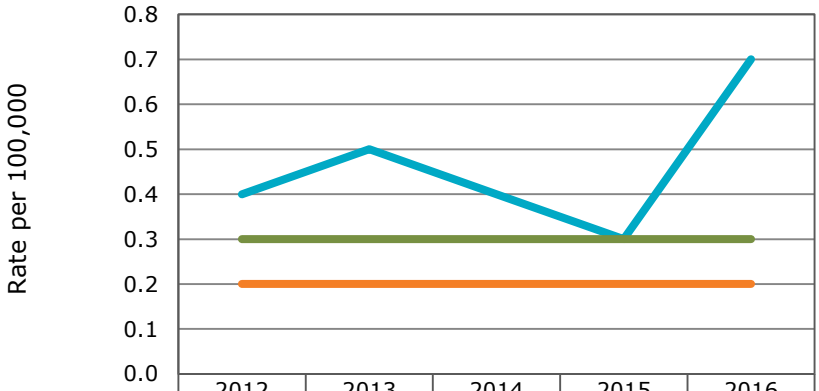
Listeriosis Cases, San Diego County 1993-2016



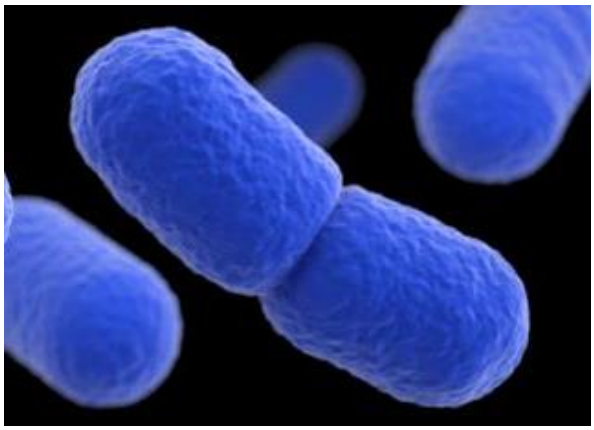
Key Points

- In 2016, there were 22 cases of listeriosis in San Diego County. This is more than double the number of cases reported in 2015 (10 cases).
- The incidence rate of listeriosis in 2016 was higher in San Diego County (0.7 per 100,000) than in California (0.3 per 100,000) and the United States (0.2 per 100,000).
- While average case counts in 2013-2015 were higher in the summer months, no seasonal pattern was noted in 2016.
- The majority of cases in San Diego County (55%) were among persons ages 65 years and older.
- Listeriosis case-patients reported consuming foods such as cold cuts/deli meat (53%), hot dogs (33%), and soft cheeses (47%).
- Three (27%) listeriosis cases reported in San Diego County in 2016 were among pregnant women. One infection during pregnancy resulted in a stillbirth.
- In 2016, there were two deaths due to listeriosis in San Diego County (9.5% case-fatality rate).

Listeriosis Incidence, San Diego County, California, and United States, 2012-2016



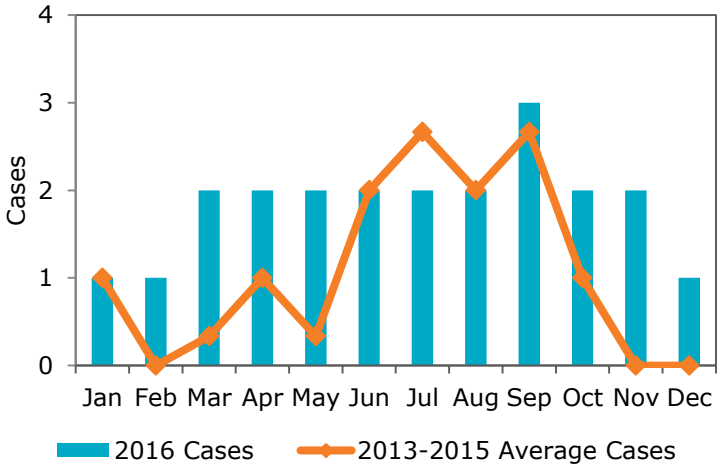
	2012	2013	2014	2015	2016
San Diego County	0.4	0.5	0.4	0.3	0.7
California	0.3	0.3	0.3	0.3	0.3
United States	0.2	0.2	0.2	0.2	0.2



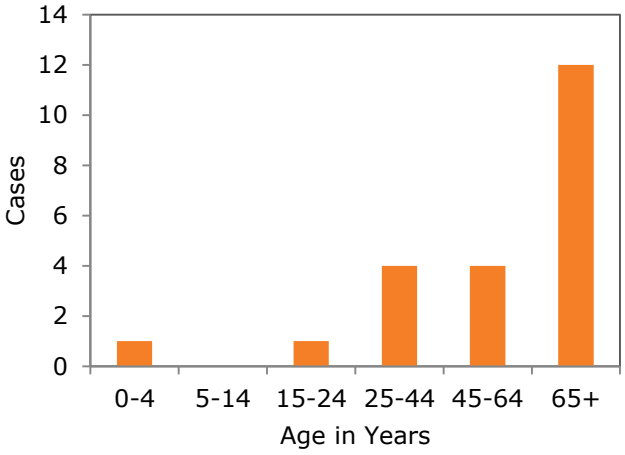
3D computer-generated image of a grouping of *Listeria monocytogenes* bacteria.
Photo credit: CDC/ James Archer, Public Health Image Library

LISTERIOSIS

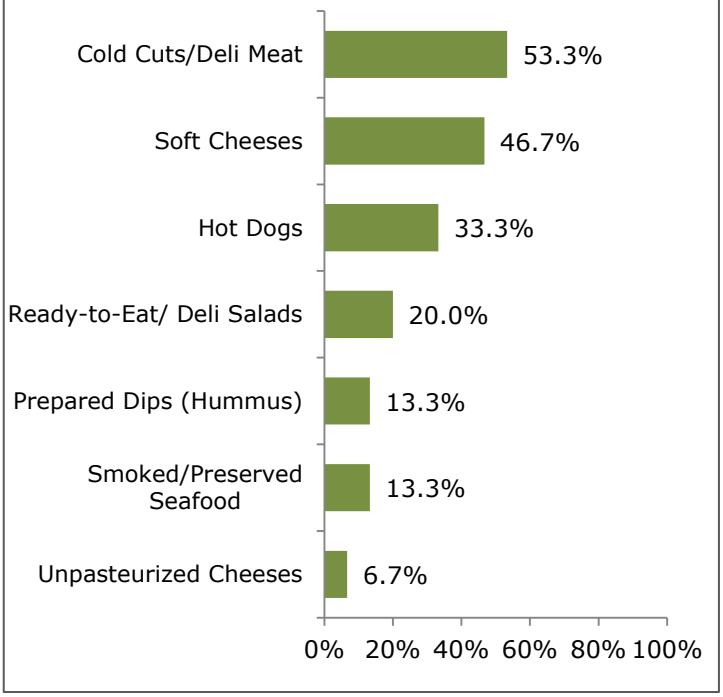
Listeriosis Cases by Month of Onset, San Diego County, 2016



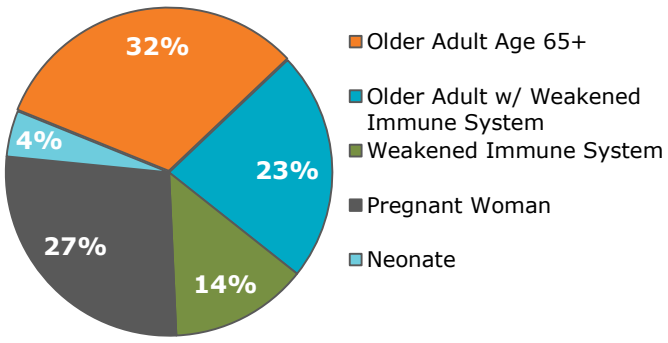
Listeriosis Cases and Rates by Age, San Diego County, 2016



Food Consumption Reported by Listeriosis Case-Patients, San Diego County, 2016



Listeriosis Risk Groups, San Diego County, 2016



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 risk food consumption calculations are cases with available information, ranging from 15-21 of total cases.
4. Food consumption includes items consumed in the four weeks prior to illness based on self-report. Food items are potential sources as reported by case-patients, not confirmed sources of infection. Excludes one neonatal case.

For more information:

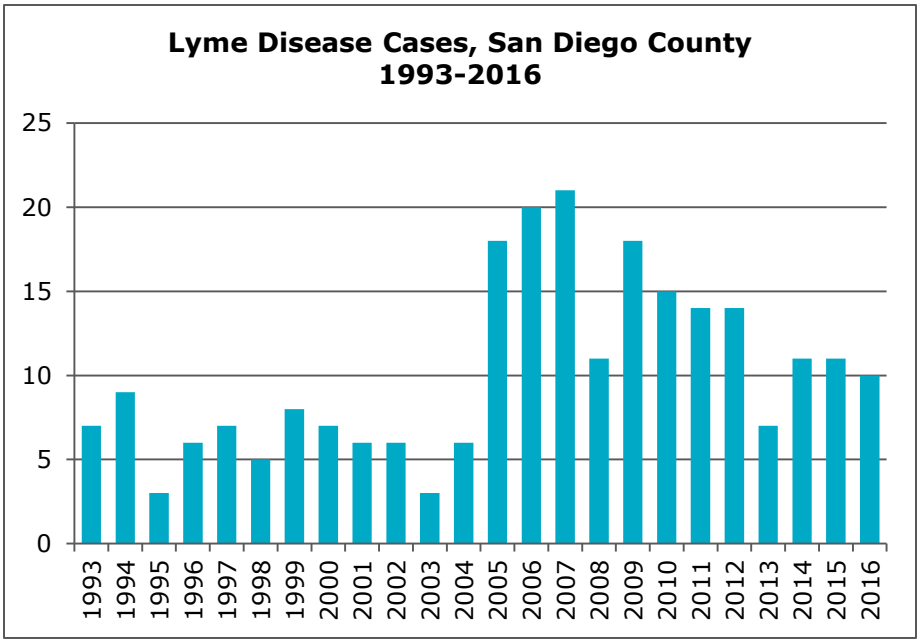
- Centers for Disease Control and Prevention (CDC) Listeriosis website
- California Department of Public Health (CDPH) Listeriosis website
- CDC/CSTE Listeriosis Case Definition

LYME DISEASE

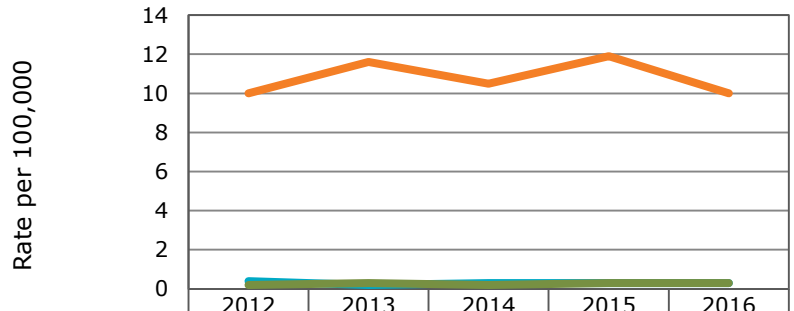
Disease Info

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 1993-2016



Lyme Disease Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	0.4	0.2	0.3	0.3	0.3
California	0.2	0.3	0.2	0.3	0.3
United States	10.0	11.6	10.5	11.9	10.0

Key Points

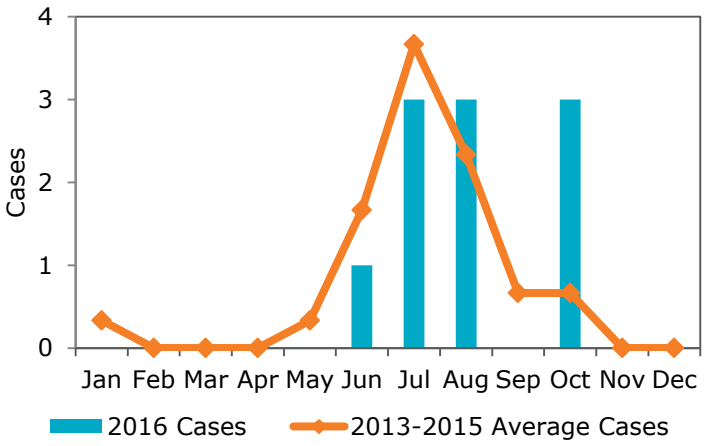
- In 2016, 10 cases of Lyme disease were reported among residents of San Diego County.
- The incidence rate of Lyme disease among San Diego County residents has remained stable between 2012 and 2016 (range 0.2-0.4 per 100,000).
- In 2016, the incidence of Lyme disease in San Diego County (0.3 per 100,000) was similar to that for California (0.3 per 100,000), and lower than the national rate (10.0 per 100,000).
- As in previous years, the majority of case-patients in 2016 had an onset of illness during the summer months. 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).
- Among the eight case-patients for whom travel history could be obtained, six reported travel to the northeastern United States and two reported travel to European countries.
- Signs and symptoms varied, though all eight case-patients for whom medical information could be obtained indicated the presence of an erythema migrans (EM) rash.

Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Lyme disease became nationally notifiable in 1991.
3. 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.
4. Information on travel history and signs/symptoms is presented for patients for whom records could be obtained. Records are missing for two cases.

LYME DISEASE

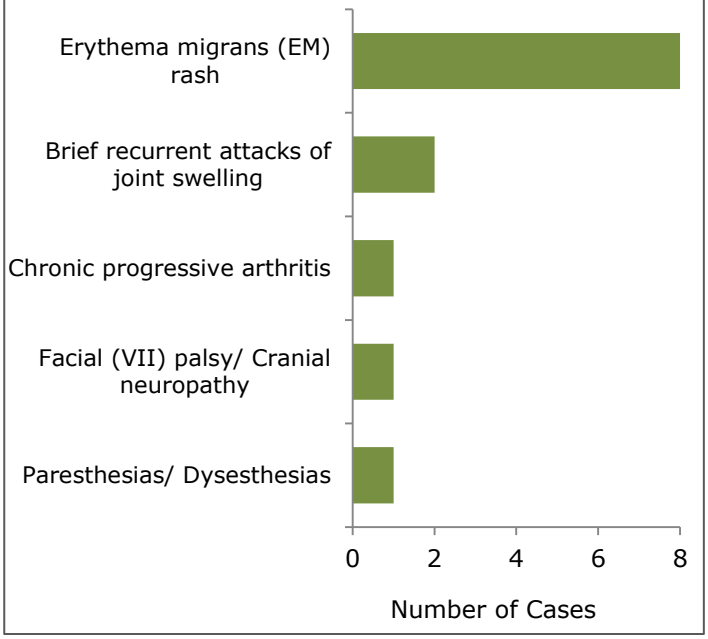
Lyme Disease Cases by Month of Onset, San Diego County, 2016



Travel Locations Reported by Lyme Disease Cases, San Diego County, 2016

Travel Location	Cases	Percent
Northeastern United States – New England	3	30
Northeastern United States – Mid-Atlantic	3	30
Europe	2	20
Unknown	2	20
Total	10	100

Signs and Symptoms Reported by Lyme Disease Case-Patients, San Diego County, 2016 (N=8)



Photograph depicting the dorsal view of an adult female western blacklegged tick, *Ixodes pacificus*, which has been shown to transmit *Borrelia burgdorferi* in the western United States.
Photo credit: CDC/ James Gathany, Public Health Image Library

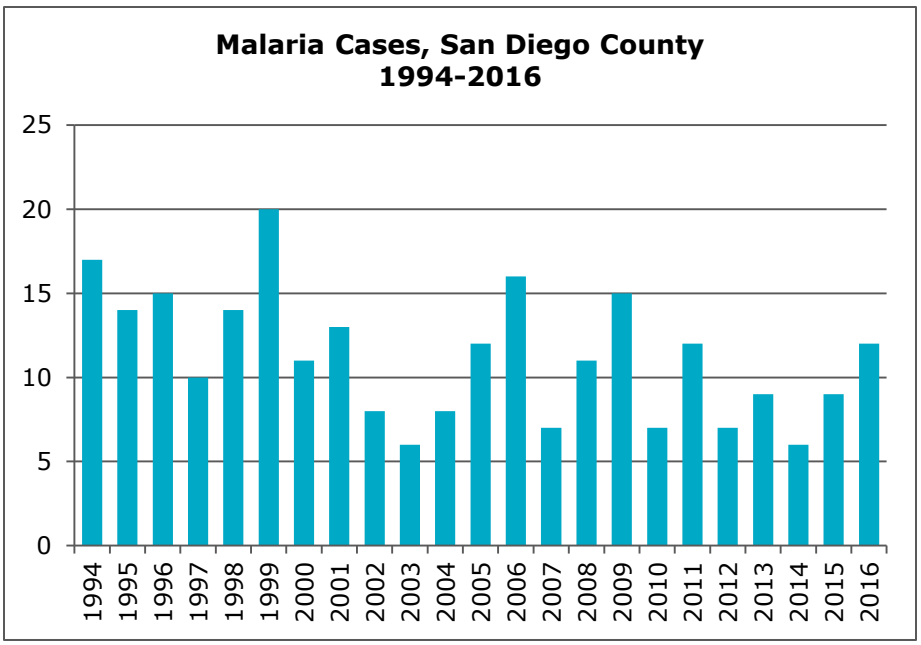
For more information:

- 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

MALARIA

Disease Info

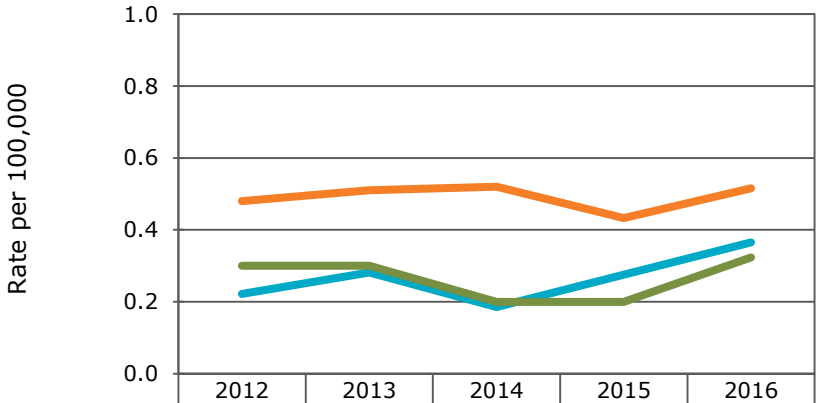
Infectious agent: *Plasmodium* species, protozoan parasites: *P. falciparum, P. vivax, P. ovale, P. malariae, P. knowlesi*
Incubation: Usually 7-30 days, depending on *Plasmodium* species
Mode of transmission: Bite of an *Anopheles* mosquito
Symptoms: Fever, chills, sweats, headaches, body aches, general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



Key Points

- There were 12 cases of malaria among San Diego County residents in 2016, slightly higher than the average of 8.6 cases over the previous five years.
- The incidence of malaria among San Diego County residents has been relatively stable between 2012 and 2016, 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 12 San Diego County cases in 2016 were imported from either Africa or Latin America and the Caribbean.
- There is no clear seasonal distribution and most cases were in adults.
- Eight of the 12 cases were caused by *P. falciparum*, the rest by *P. vivax* or *P. ovale*.
- None of the case-patients took consistent chemoprophylaxis.

Malaria Incidence, San Diego County, California, and United States, 2012-2016

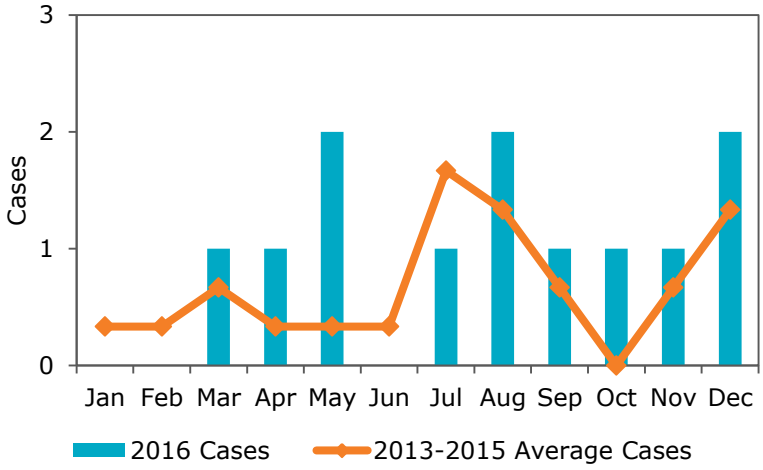


	2012	2013	2014	2015	2016
San Diego County	0.2	0.3	0.2	0.3	0.4
California	0.3	0.3	0.2	0.2	0.3
United States	0.5	0.5	0.5	0.4	0.5

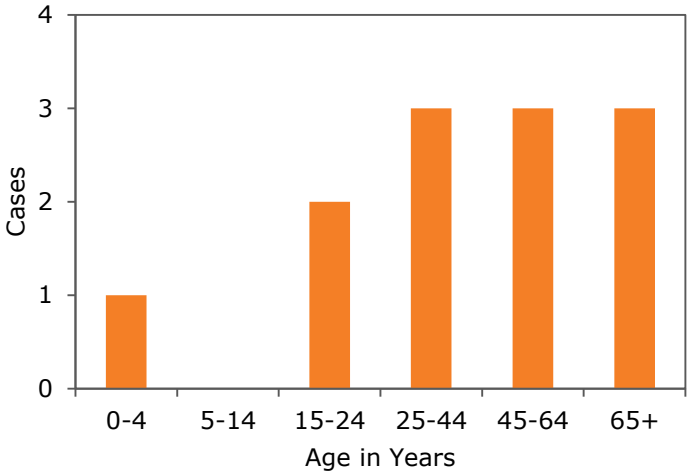
Anopheles quadriannulatus mosquito
Photo credit: CDC/ James Gathany, Public Health Image Library

MALARIA

Malaria Cases by Month of Onset, San Diego County, 2016



Malaria Cases by Age, San Diego County, 2016



Select Characteristics of Malaria Cases, San Diego County, 2016

Characteristic	Cases	Percent
Plasmodium species		
P. falciparum	8	66.7
P. vivax	3	25.0
P. vivax or *P. ovale*	1	8.3
Symptomatic	12	100.0
Hospitalized	8	66.7
Took chemoprophylaxis		
Yes	1*	8.3
No	9	75.0
Unknown	2	16.7
Travel location		
Africa	9	75.0
Latin America/Caribbean	3	25.0
Reason for travel		
Visiting friends/relatives	5	41.7
Refugee/immigrant to U.S.	3	25.0
Tourism	2	16.7
Peace Corps	1	8.3
Business	1	8.3

*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. Clinical, laboratory, and travel information was available for all 12 cases; 12 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 United States Marine Corps personnel returning to Camp Pendleton after deployment in Somalia.

For more information:

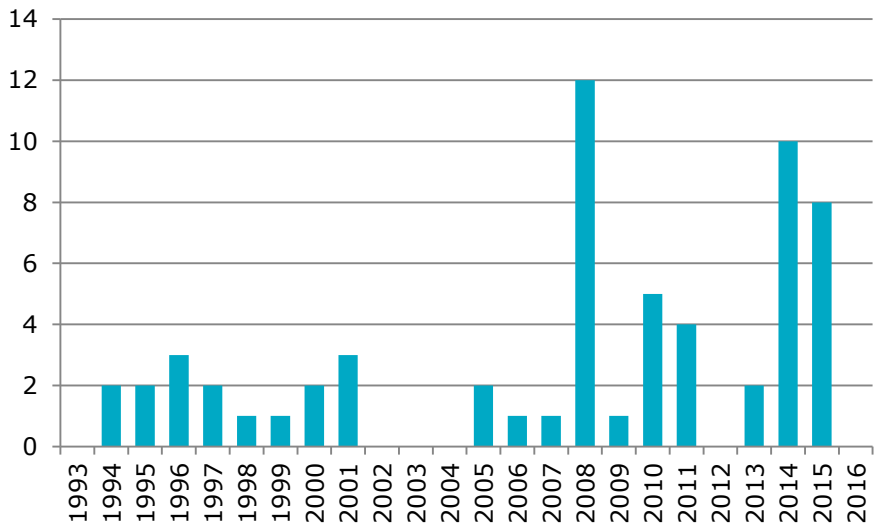
- Centers for Disease Control and Prevention (CDC) Malaria website
- CDC Health Information for International Travel (the Yellow Book) – Malaria
- CDC Malaria Maps
- CDC/CSTE Malaria Case Definition
- California Department of Public Health (CDPH) Malaria website
- World Health Organization Malaria website

MEASLES (RUBEOLA)

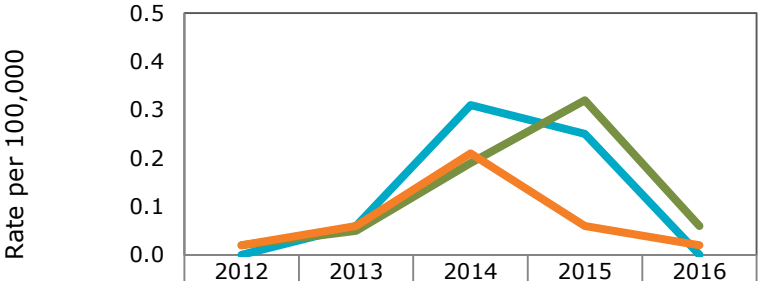
Disease Info

Infectious agent: Measles virus, a member of 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 1993-2016



Measles Incidence, San Diego County, California, and United States, 2012-2016



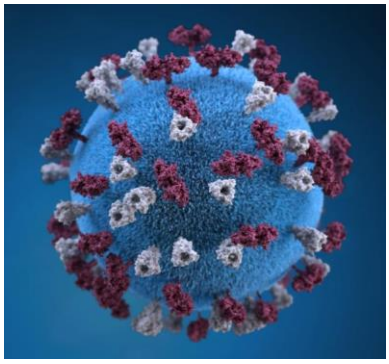
	2012	2013	2014	2015	2016
San Diego County	0.00	0.06	0.31	0.25	0.00
California	0.02	0.05	0.19	0.32	0.06
United States	0.02	0.06	0.21	0.06	0.02

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 2016, there were no cases of measles in San Diego County.
- 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 multijurisdictional 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:

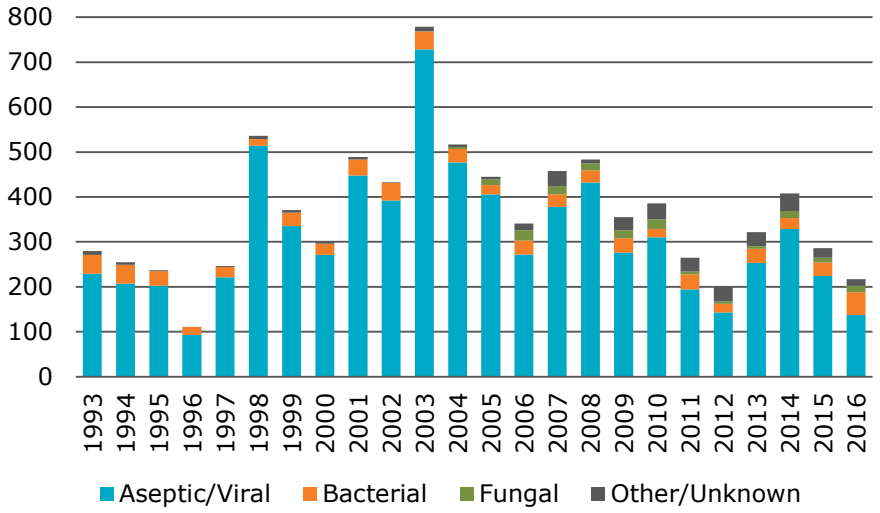
- Centers for Disease Control and Prevention (CDC) Measles website
- California Department of Public Health (CDPH) Measles website
- CDC/CSTE Measles Case Definition
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book) – Measles
- CDC Health Information for International Travel (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, 1993-2016



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

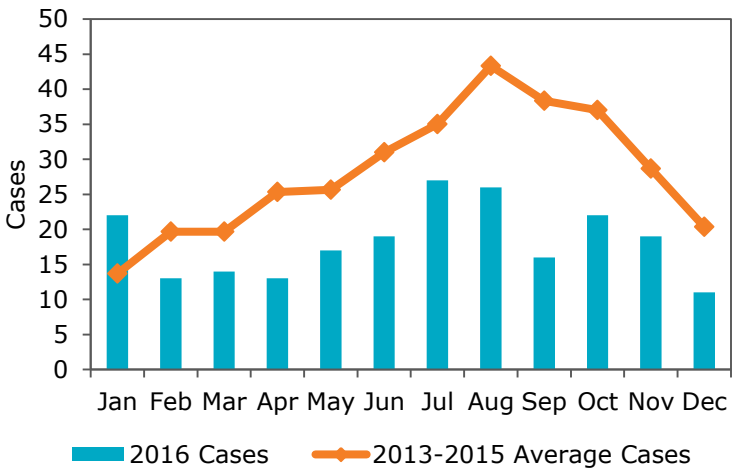
- In 2016, there were 217 cases of meningitis reported in San Diego County: 137 (63%) viral/aseptic, 51 (24%) bacterial, 14 (6%) fungal, and 15 (7%) other or unknown cause.
- Non-polio enteroviruses were the most common cause of viral meningitis in 2016. The most common etiology of bacterial meningitis 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 (16.8 per 100,000 population) was in children under five years old.
- Higher rates of meningitis could be found in the northern part of San Diego County.

Etiology of Meningitis Cases, San Diego County, 2016

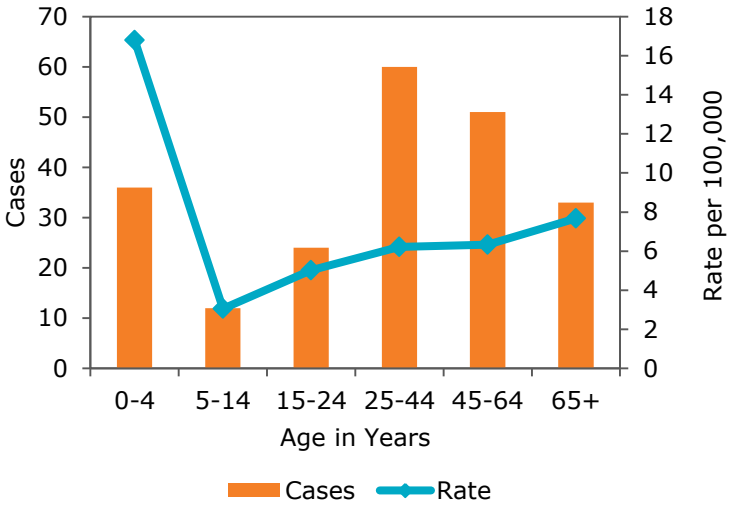
Etiology	Cases
Viral (n=137)	
Enterovirus	43
Herpes Simplex Virus	29
Varicella Zoster Virus	5
Unknown etiology	60
Bacterial (n=51)	
Streptococcus pneumonaie	15
Staphylococcus aureus	7
Haemophilus influenzae	4
Group B *Streptococcus*	3
Escherichia coli	3
Other bacteria	8
Unknown etiology	11
Fungal (n=14)	
Cryptococcus	13
Candida	1
Other/Unknown (n=15)	

MENINGITIS

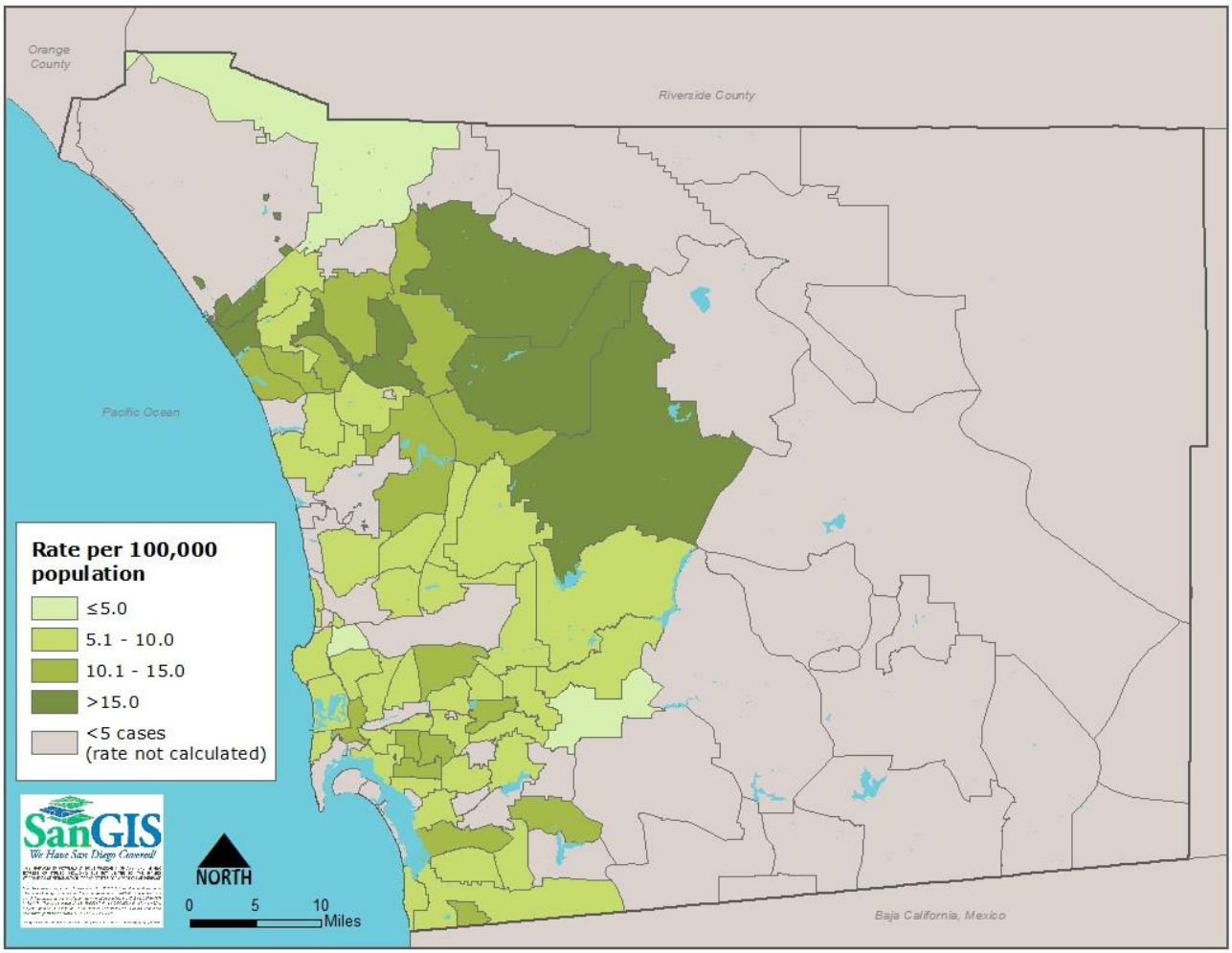
Meningitis Cases by Month of Onset, San Diego County, 2016



Meningitis Cases and Rates by Age, San Diego County, 2016



Meningitis Rates by Zip Code of Residence, San Diego County, 2014-2016

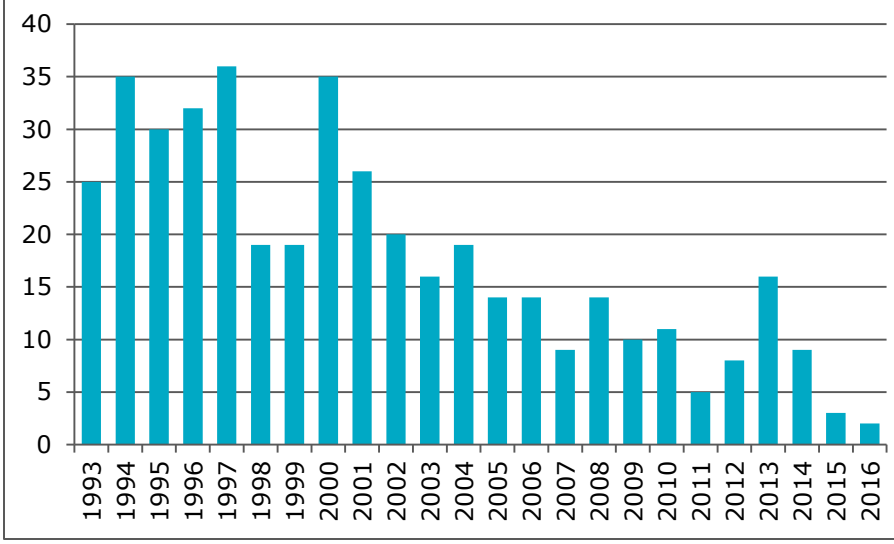


MENINGOCOCCAL DISEASE

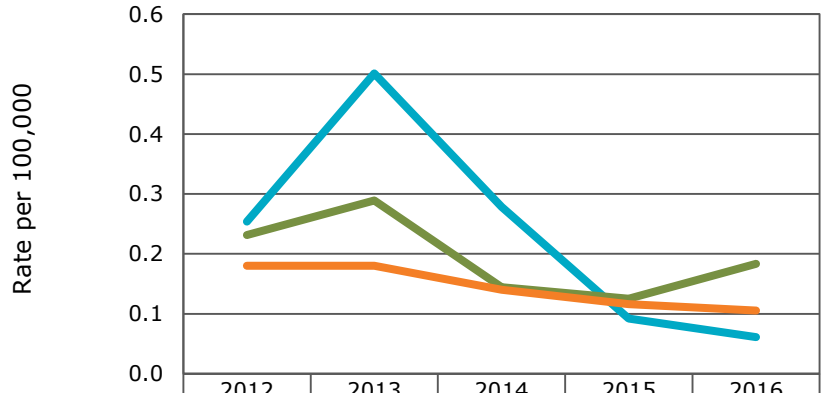
Disease Info

Infectious agent: *Neisseria meningitidis*, gram-negative bacteria; 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, 1993-2016



Meningococcal Disease Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	0.3	0.5	0.3	0.1	0.1
California	0.2	0.3	0.1	0.1	0.2
United States	0.2	0.2	0.1	0.1	0.1

Key Points

- There were two cases of meningococcal disease among San Diego County residents in 2016. 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.
- Both of the 2016 cases in San Diego County were caused by ungroupable strains of the bacteria and presented clinically as meningitis.
- Both cases were in 15-24-year-olds who survived their illnesses.

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.

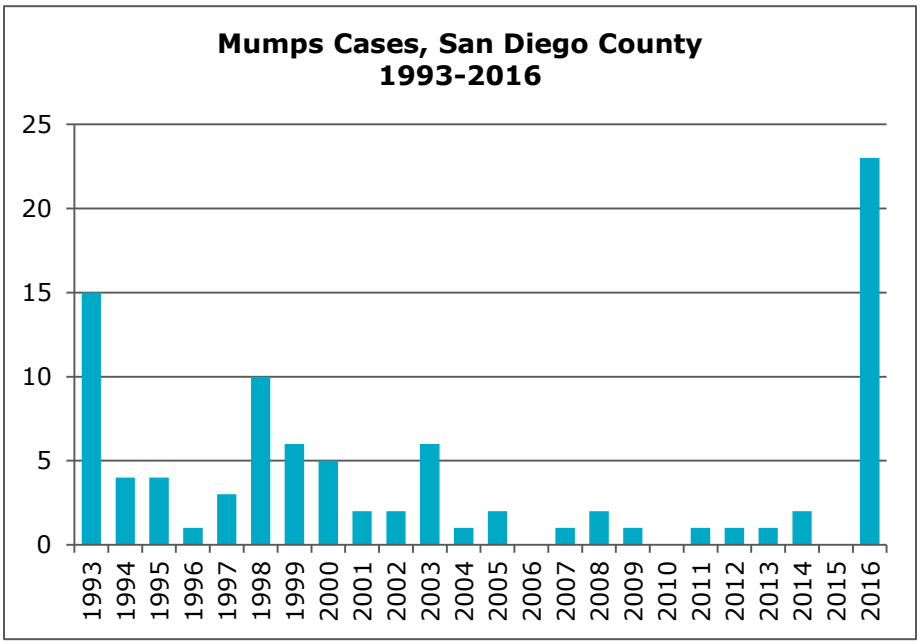
For more information:

- 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

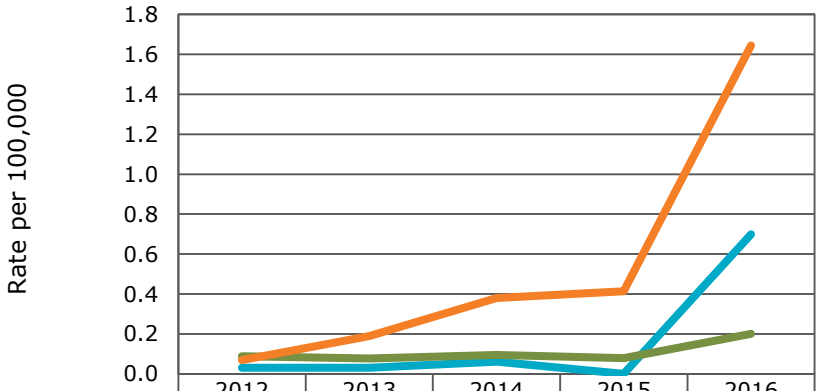
MUMPS

Disease Info

Infectious agent: Mumps virus, a 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



Mumps Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	0.0	0.0	0.1	0.0	0.7
California	0.1	0.1	0.1	0.1	0.2
United States	0.1	0.2	0.4	0.4	1.6

Key Points

- There were 23 cases of mumps among San Diego County residents in 2016, compared to an average of one per year in the previous decade.
- There were two university-associated outbreaks in San Diego County in 2016, one in the spring and one in the fall. Nineteen cases were associated with these two outbreaks.
- The two outbreaks were largely responsible for the epidemiologic characteristics of mumps infections in San Diego in 2016, with most cases occurring during the academic year and affecting the student-aged population.
- The median age of case-patients was 21 years, with a range of 19-46 years. The highest number and rate (18, 3.8 per 100,000 population) were in the 15-24-year-old age group.
- The mumps incidence rate in San Diego County was 0.7 per 100,000 population in 2016, a dramatic increase over previous years. A similar pattern, with an even higher incidence rate (1.6 per 100,000), was observed in the United States, likely due to a number of large university-associated outbreaks around the country. California saw a much smaller increase in incidence.

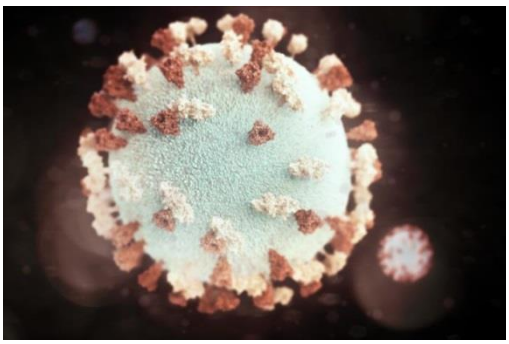
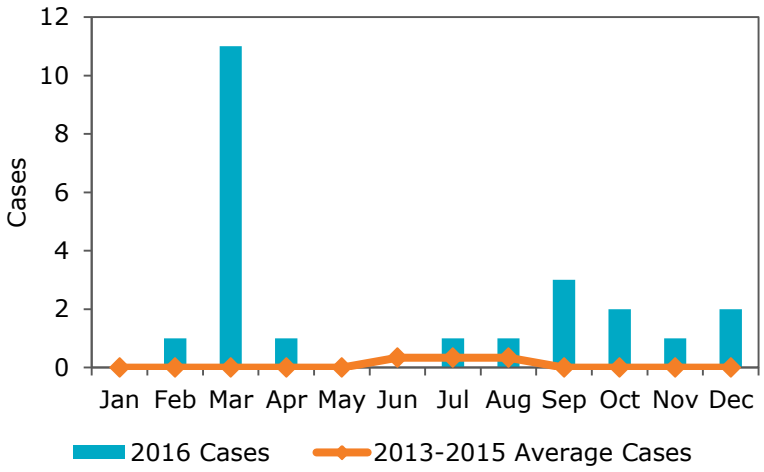


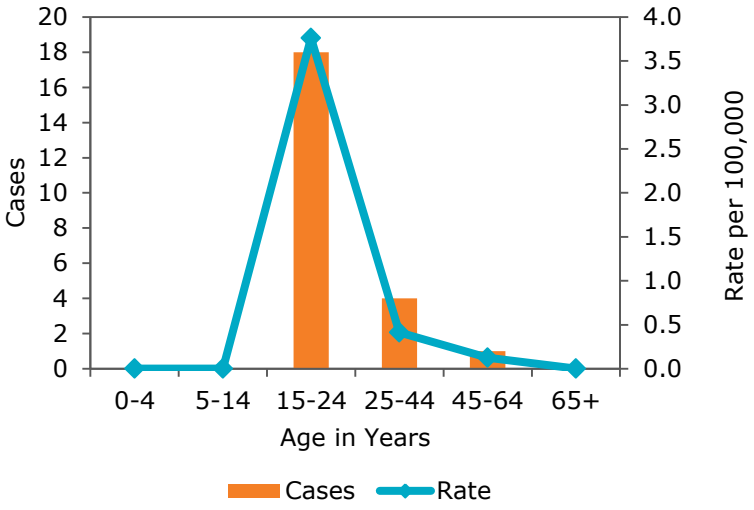
Illustration of a mumps virus particle studded with glycoprotein tubercles.
Credit: CDC/Alissa Eckert, Public Health Image Library

MUMPS

Mumps Cases by Month of Onset, San Diego County, 2016



Mumps Cases and Rates by Age, San Diego County, 2016



Select Characteristics, San Diego County Cases, 2016

20 CASES (87%) WERE UNIVERSITY-ASSOCIATED.

19 CASES WERE PART OF **2** UNIVERSITY OUTBREAKS.

MEDIAN AGE
21
YEARS

HOSPITALIZATIONS
0

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.

For more information:

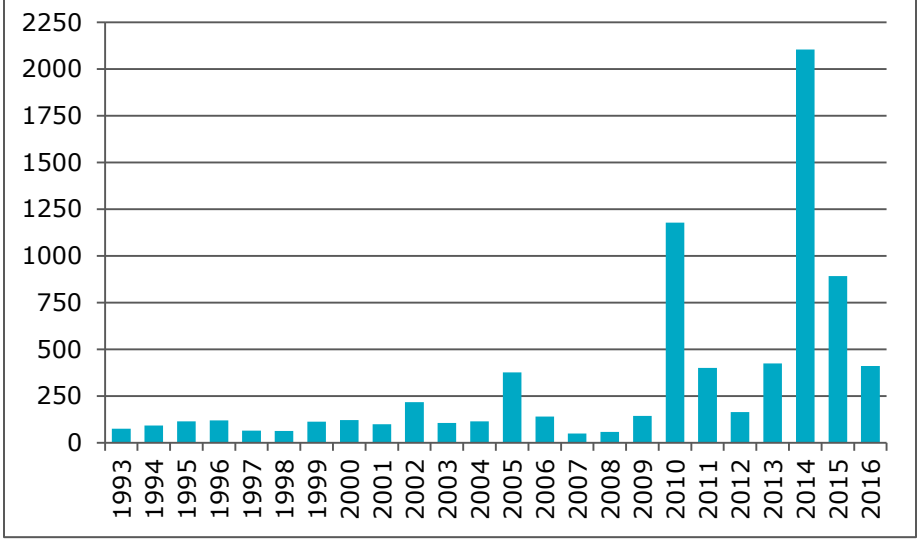
- Centers for Disease Control and Prevention (CDC) Mumps website
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book) – Mumps
- CDC/CSTE Mumps Case Definition
- California Department of Public Health (CDPH) Mumps website
- County of San Diego Immunization Program website

PERTUSSIS

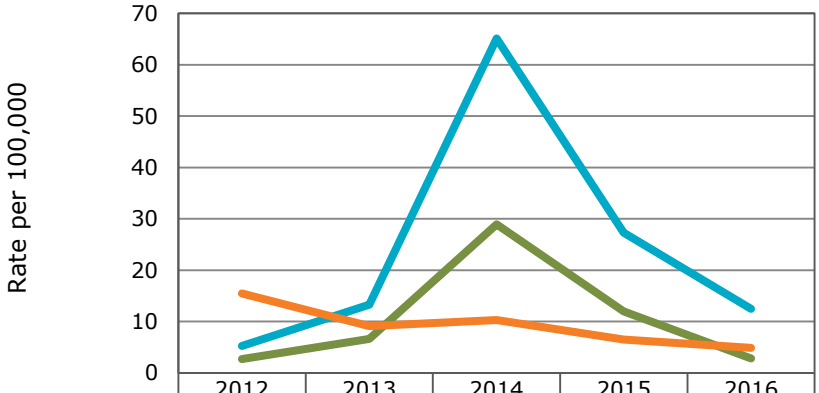
Disease Info

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 1993-2016



Pertussis Incidence, San Diego County, California, and United States, 2012-2016



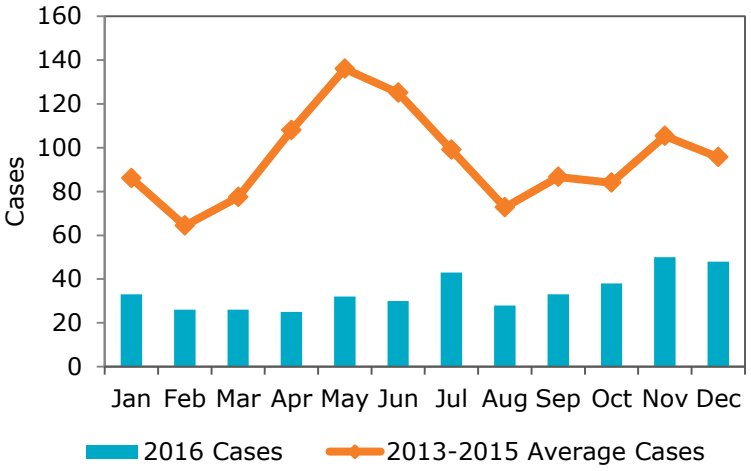
	2012	2013	2014	2015	2016
San Diego County	5.2	13.3	65.1	27.3	12.5
California	2.7	6.6	28.9	12.0	2.8
United States	15.5	9.1	10.3	6.5	4.9

Key Points

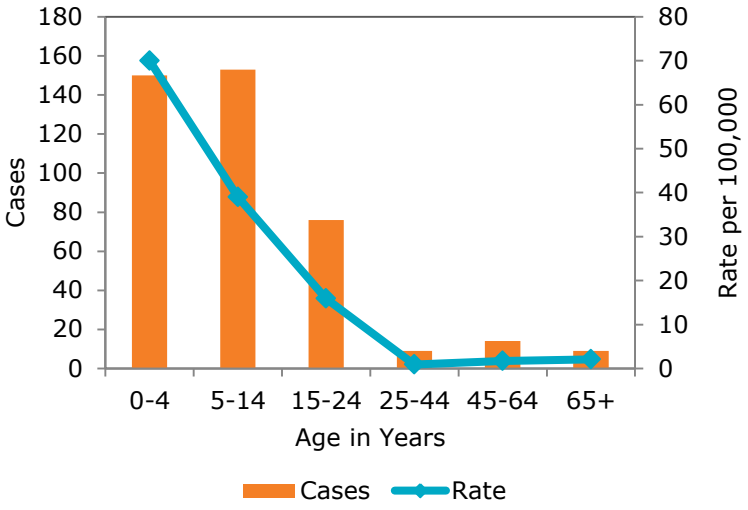
- In 2016, there were 411 cases of pertussis in San Diego County. Peaks in incidence occur every 3-5 years.
- The incidence rate of pertussis in 2016 was higher in San Diego County (12.5 per 100,000) than in California (2.8 per 100,000) and the United States (4.9 per 100,000).
- After the introduction 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 2016, the majority of cases (74%) were diagnosed among persons under the age of 15 years.
- Rates of infection were highest among Hispanic/Latino infants under the age of six months (245.2 per 100,000). Antibiotic prophylaxis of infants less than one year of age and their contacts is important as infants may develop serious complications from pertussis, including death.
- In 2016, incidence rates of pertussis were highest among residents of the North Coastal, North Inland, and South HHSA Regions of the county.

PERTUSSIS

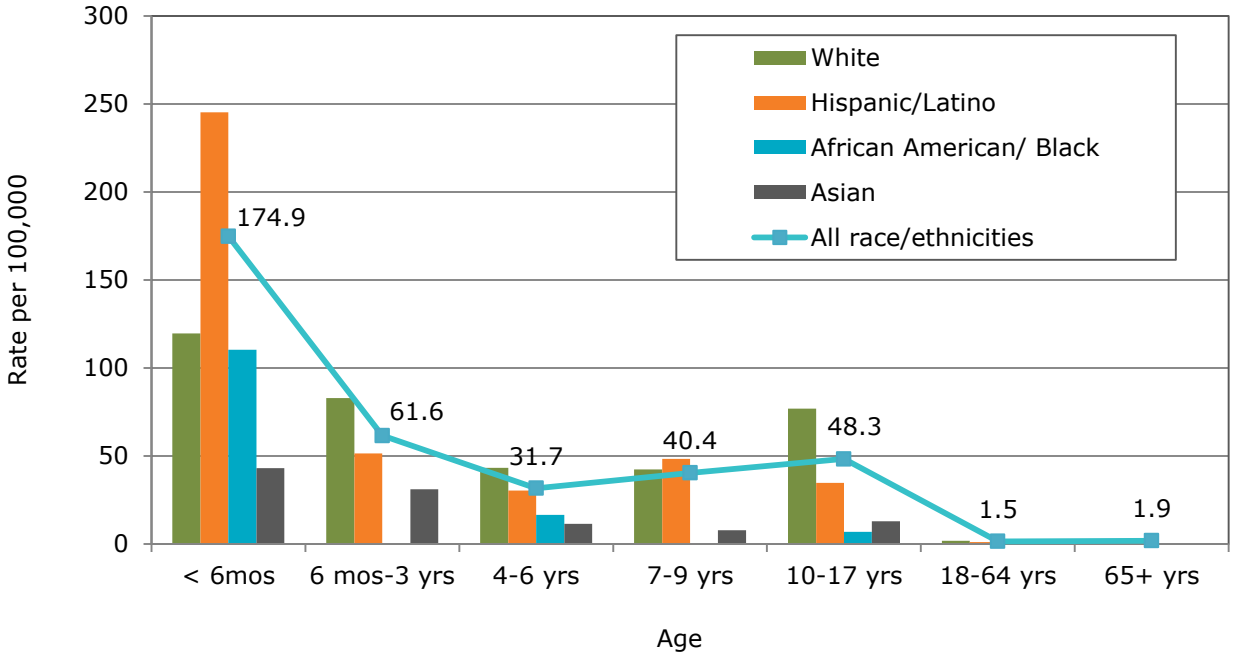
Pertussis Cases by Month of Onset, San Diego County, 2016



Pertussis Cases and Rates by Age, San Diego County, 2016



Pertussis Rates by Age and Race/Ethnicity, San Diego County, 2016

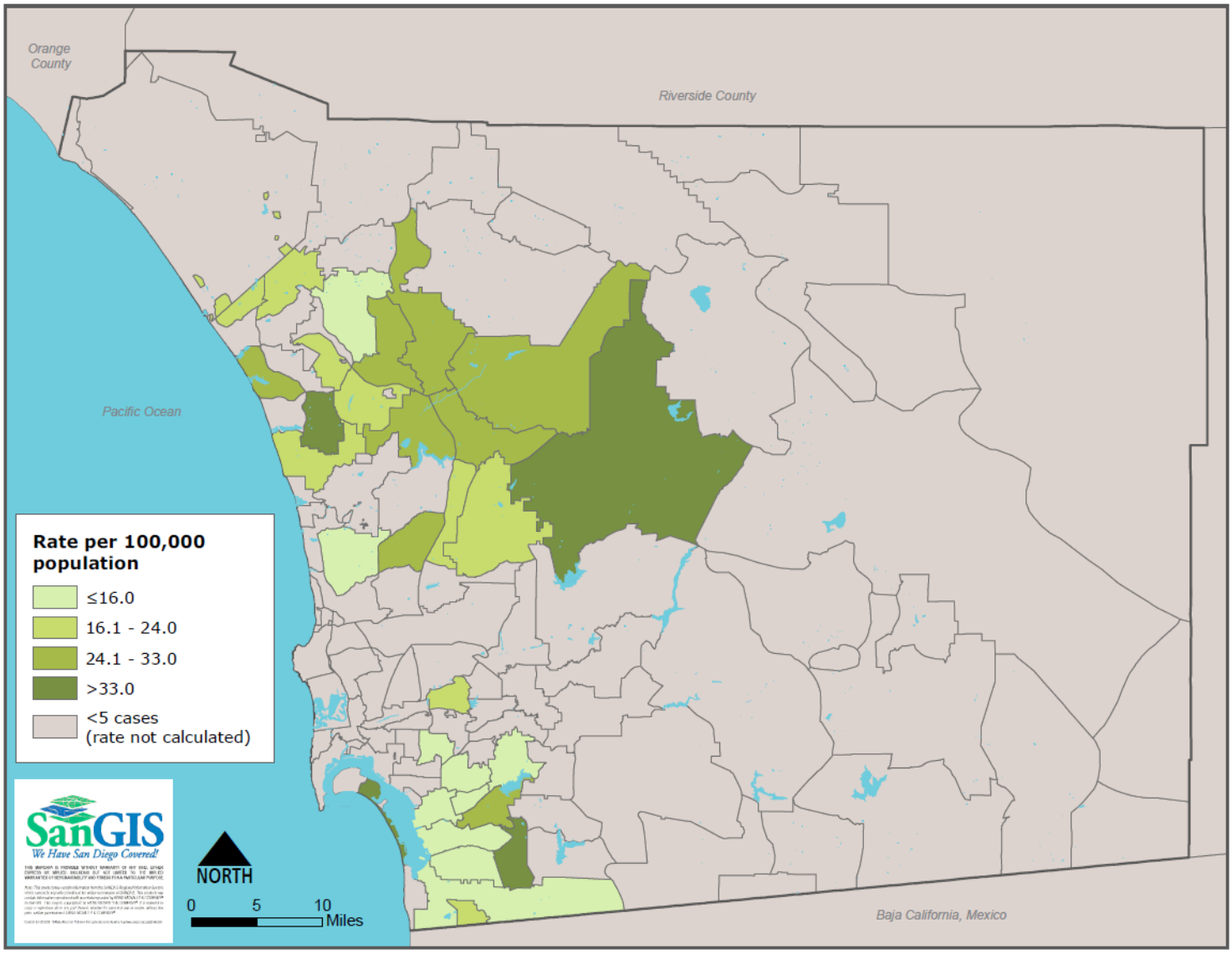


For more information:

- 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, 2016



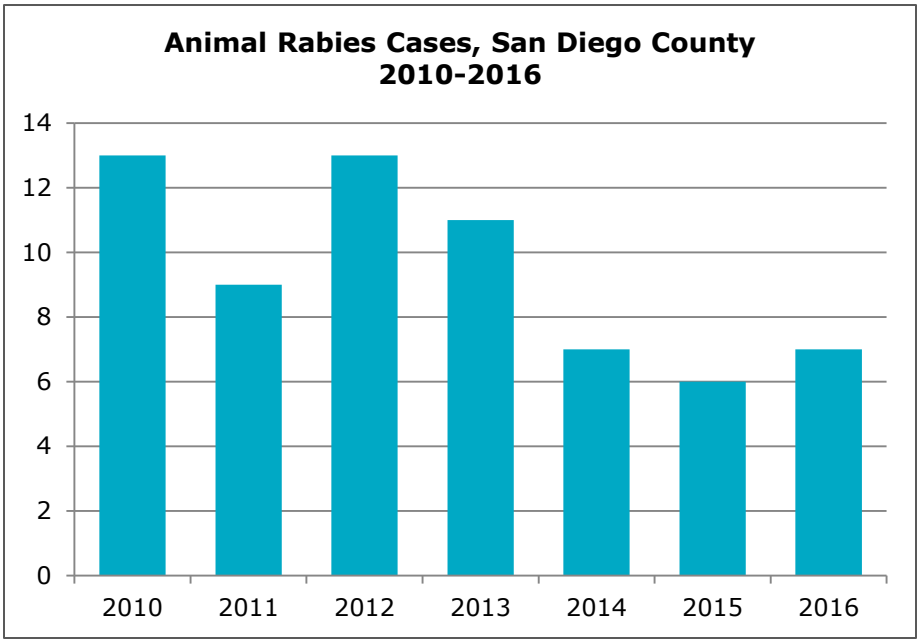
Notes:

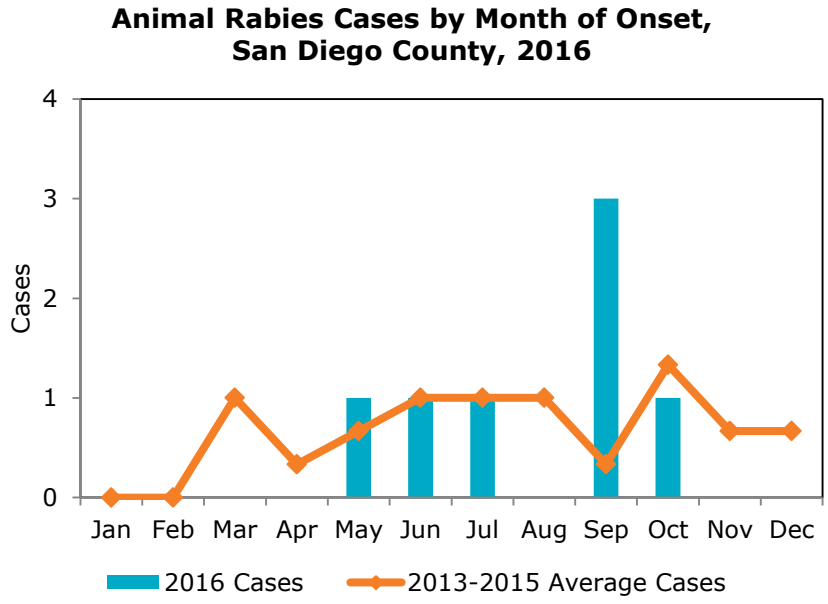
1. San Diego County and California counts include confirmed, probable, and suspect cases following the California Department of Health case definition. US counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Pertussis first became nationally notifiable in 1973.
3. Pertussis 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).

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



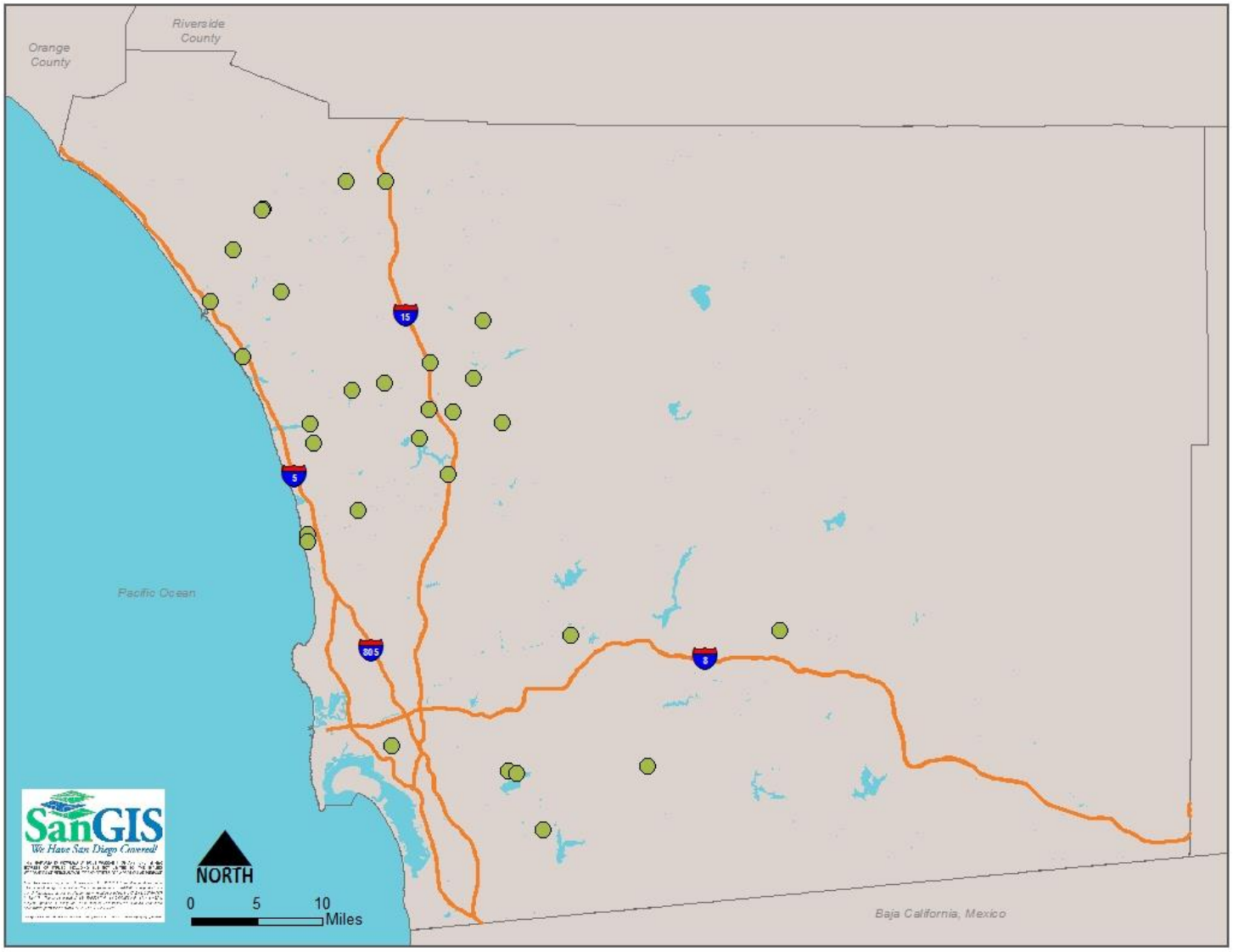


Key Points

- Sixty-six animals tested positive for rabies in San Diego County between 2010 and 2016. Annual counts ranged from six to 13.
- 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.
- The majority of 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.
- 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, 2012-2016



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 was 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 during the five-year period; they appear as a single dot on the map.

For more information:

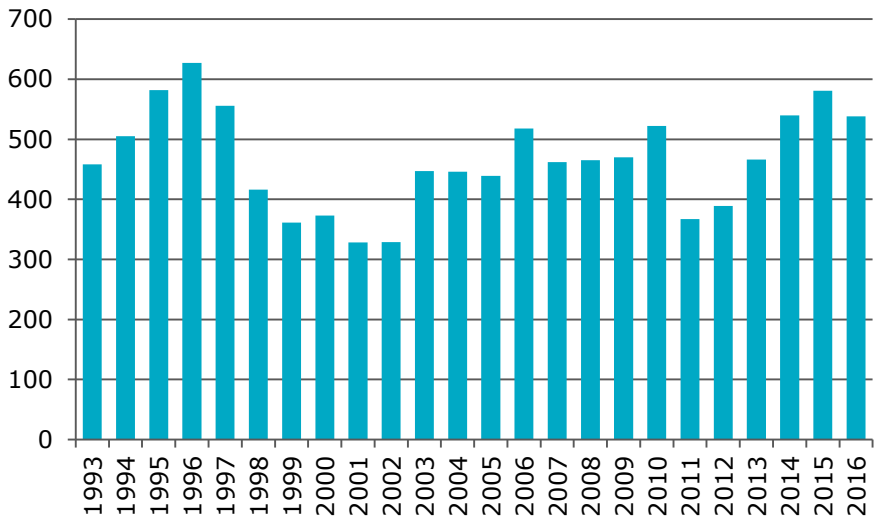
- Centers for Disease Control and Prevention (CDC) Rabies website
- Compendium of Animal Rabies Prevention and Control, 2016 (NASPHV)
- Rabies Surveillance in the United States during 2014
- California Department of Public Health (CDPH) Rabies Surveillance and Prevention website
- CDPH California Compendium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

SALMONELLOSIS

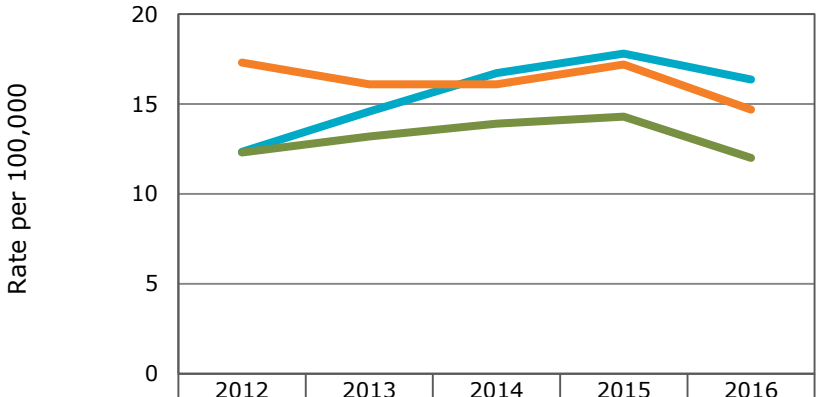
Disease Info

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 Cases, San Diego County 1993-2016



Salmonellosis Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	12.3	14.6	16.7	17.8	16.4
California	12.3	13.2	13.9	14.3	12.0
United States	17.3	16.1	16.1	17.2	14.7

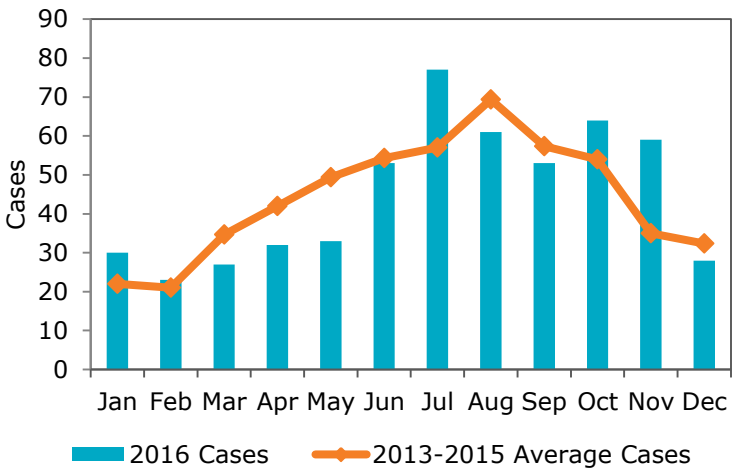
Key Points

- In 2016, there were 538 cases of salmonellosis in San Diego County. This is a decrease of seven percent compared to the previous year (581 cases).
- The incidence rate of salmonellosis in 2016 was slightly higher in San Diego County (16.4 per 100,000) than in California (12.0 per 100,000) and the United States (14.7 per 100,000).
- In 2016, 25% of salmonellosis case-patients in San Diego County were hospitalized for their infection.
- In prior years, the onset of most cases of salmonellosis was in the summer months. In 2016, a second peak was noted in the fall.
- The greatest number of cases in 2016 were in persons between the ages of 25-44 years (143 cases), followed by persons age 45-64 years (106 cases). The highest rates, however, were among children ages 0-4 years (41.5 per 100,000).
- *S.* Enteritidis was the most frequently reported serotype among San Diego County cases.
- Commonly reported risk factors included travel (30%), eating food prepared outside of the home (69%), and consuming eggs (59%), poultry (62%), and fresh fruit (66%).

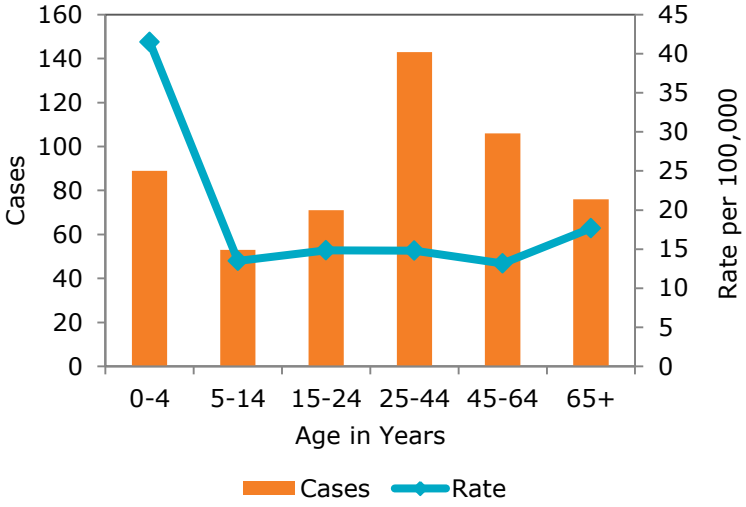
25% HOSPITALIZED 2016

SALMONELLOSIS

Salmonellosis Cases by Month of Onset, San Diego County, 2016



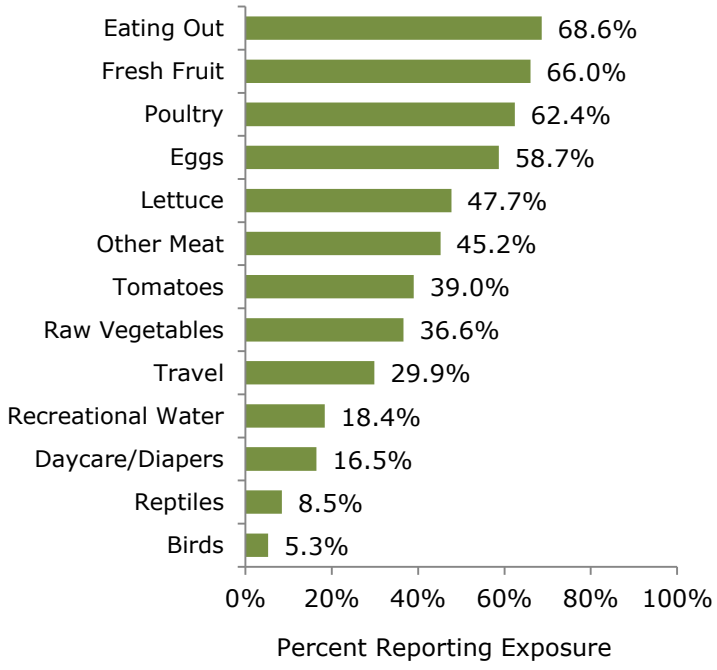
Salmonellosis Cases and Rates by Age, San Diego County, 2016



Reported Salmonella Serotypes, San Diego County, 2016

Serotype	Cases	Percent
Enteritidis	150	27.9
Newport	38	7.1
Lomalinda	29	5.4
Typhimurium	28	5.2
Montevideo	26	4.8
Muenchen	21	3.9
Braenderup	19	3.5
I 4,[5],12:i:-	15	2.8
All other serotypes	139	25.8
Unknown	76	14.1
Total	538	100.0

Risk Factors Reported by Salmonellosis Case-Patients, San Diego County, 2016

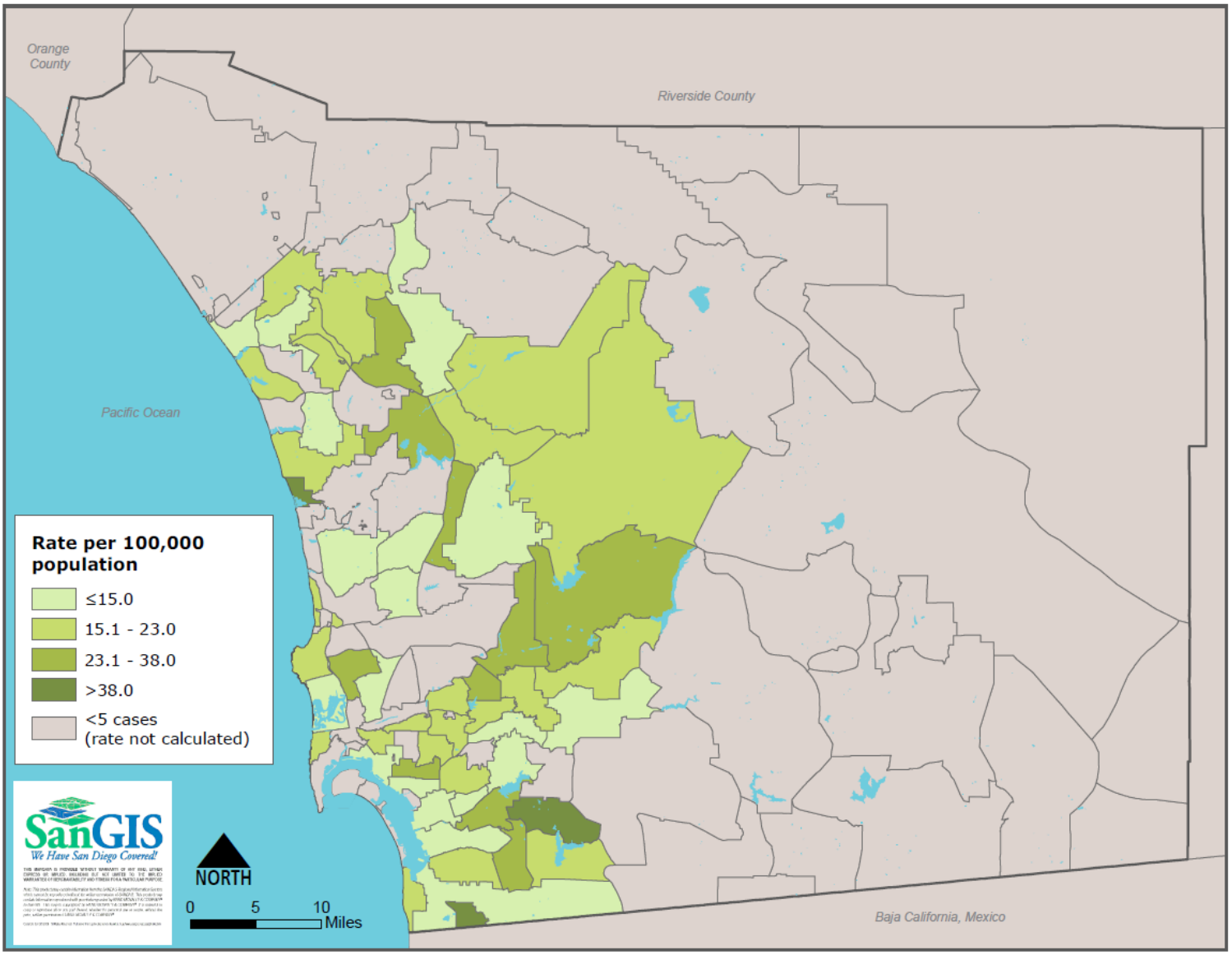


Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria. In 2016, the CDC/CSTE case definition was updated to include a case with a positive *Salmonella* CIDT result as probable rather than suspected.
2. Salmonellosis became nationally notifiable in 1944.
3. Serotype totals add to more than 100% due to infections with multiple serotypes.
4. Denominators for hospitalization and risk factor calculations are cases with available information, ranging from 323-451 of total cases.
5. 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, 2016



For more information:

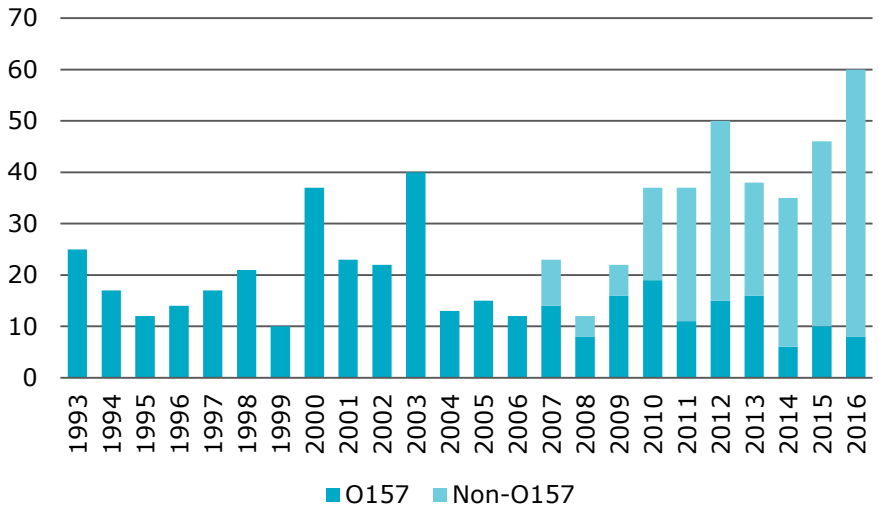
- Centers for Disease Control and Prevention (CDC) Salmonellosis website
- California Department of Public Health (CDPH) Salmonellosis website
- CDC/CSTE Salmonellosis Case Definition

SHIGA TOXIN-PRODUCING *E. COLI*

Disease Info

Infectious agent: Strains of *Escherichia coli* (*E. coli*) 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

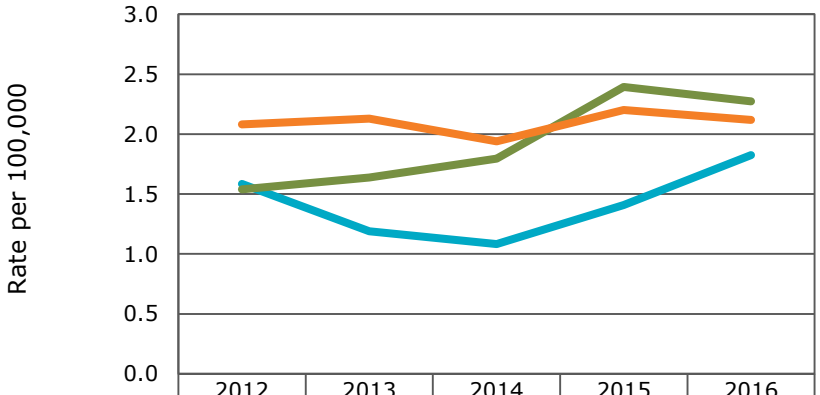
Shiga Toxin-Producing *E. coli* Cases, San Diego County, 1993-2016



Key Points

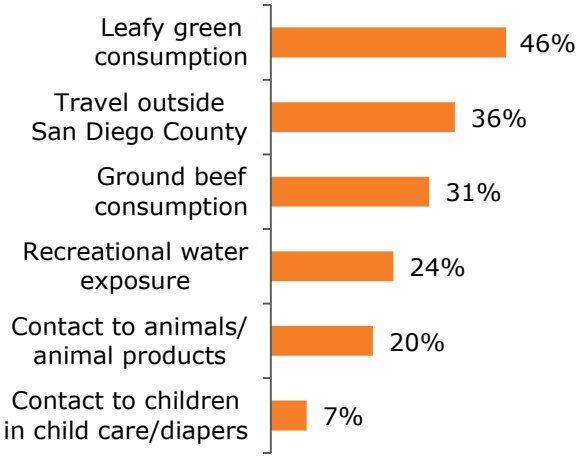
- In 2016, there were 60 cases of Shiga toxin-producing *E. coli* (STEC) in San Diego County, an increase of 30% over 2015, when there were 46 cases.
- Thirteen percent of STEC cases in 2016 were serogroup O157, the lowest proportion to date. Other common serogroups were O26 and O103.
- Only Shiga toxin (Stx) 1 was produced in 31 cases in 2016, while 26 cases had Stx2 only or both Stx1 and Stx2.
- Incidence of reported STEC in San Diego County has been lower than in California and the United States for most of the past five years, though approaching their levels in 2016.
- While STEC cases often peak during the summer months, more cases were reported late in the year in 2016.
- Both counts and rates of STEC in San Diego County were highest among children under five years old in 2016.
- Consumption of ground beef (31%) and leafy greens (46%) and travel outside of San Diego County (36%) were the most common exposures reported by cases.

Shiga Toxin-Producing *E. coli* Incidence, San Diego County, California, and United States, 2012-2016



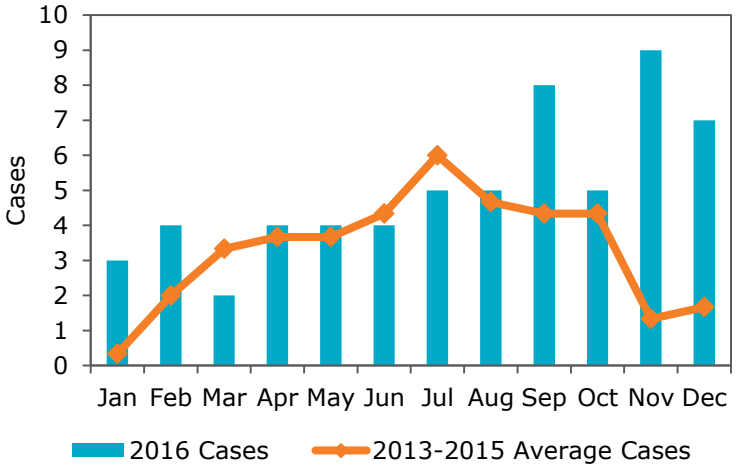
	2012	2013	2014	2015	2016
San Diego County	1.6	1.2	1.1	1.4	1.8
California	1.5	1.6	1.8	2.4	2.3
United States	2.1	2.1	1.9	2.2	2.1

Risk Factors Reported by Case-patients, Shiga Toxin-producing *E. coli*, San Diego County, 2016

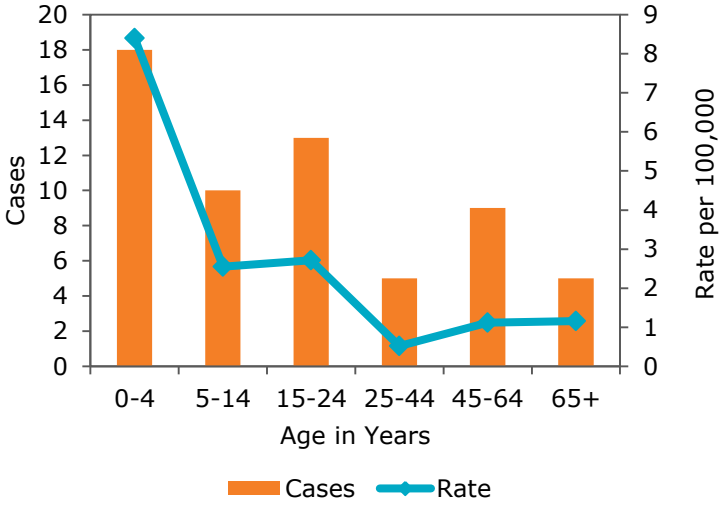


SHIGA TOXIN-PRODUCING *E. COLI*

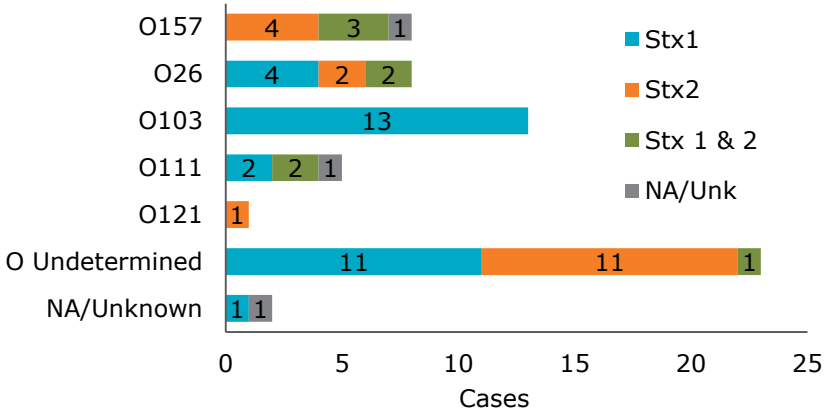
Shiga Toxin-Producing *E. coli* Cases by Month of Onset, San Diego County, 2016



Shiga Toxin-Producing *E. coli* Cases and Rates by Age, San Diego County, 2016



Shiga Toxin-Producing *E. coli* Serogroups by Shiga Toxin (Stx) Type, San Diego County, 2016



34% EMERGENCY DEPARTMENT VISIT

7% HOSPITALIZED

0 CASES OF HEMOLYTIC UREMIC SYNDROME

2016

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
- United States Department of Agriculture Food Safety and Inspection Service *E. coli* website

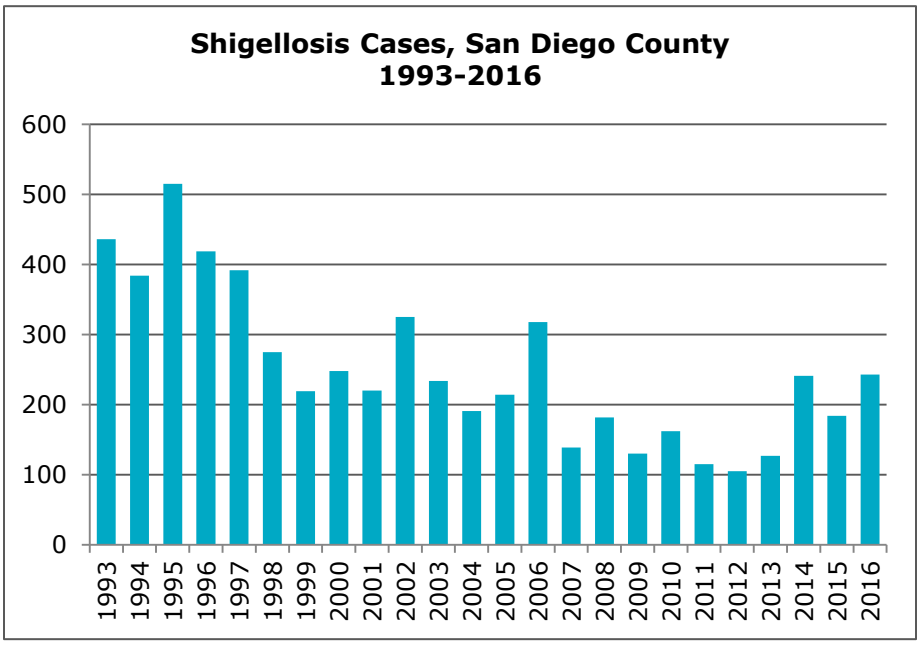
Notes:

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. In California, *E. coli* non-O157 became reportable in late 2006. Use of Shiga toxin screening tests have increased since the early 2000s, leading to increased detection of non-O157 STEC.
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 15 Shiga toxin only cases in 2016 (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. Probable cases included here do not have serogroup information. Shiga toxin information is missing for two cases reported to San Diego County from other states.
5. Denominators for clinical and risk factor calculations are cases with available information, ranging from 41-54 of total cases.
6. Risk factors are potential exposures mentioned by case-patients, not confirmed sources of infection.

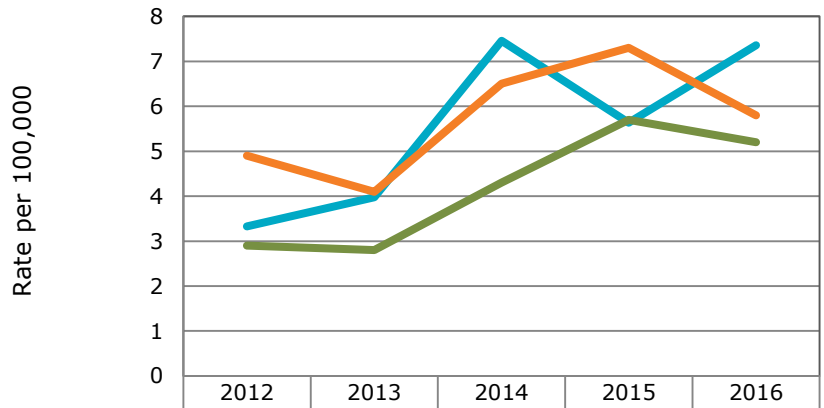
SHIGELLOSIS

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, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	3.3	4.0	7.5	5.6	7.4
California	2.9	2.8	4.3	5.7	5.2
United States	4.9	4.1	6.5	7.3	5.8

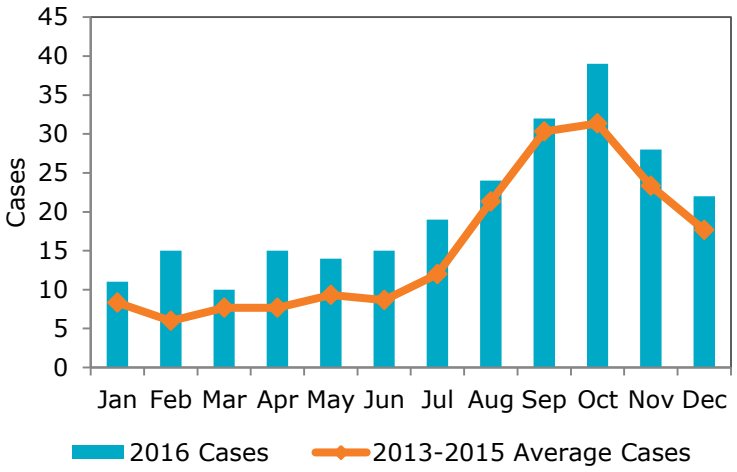
Key Points

- In 2016, there were 243 cases of shigellosis in San Diego County. This is an increase of 32% compared to the previous year (184 cases).
- The incidence rate of shigellosis in 2016 was slightly higher in San Diego County (7.4 per 100,000) than in California (5.2 per 100,000) and the United States (5.8 per 100,000).
- Similar to prior years, cases of shigellosis increased through the end of the summer months and peaked in October.
- The majority of cases (60%) were in persons between the ages of 25-64 years. Although case counts were lower among persons ages 5-14 years, rates of infection were high among this age group (8.7 per 100,000).
- Commonly reported risk factors included travel (29%), eating food prepared outside of the home (75%), and consuming raw vegetables (53%), fresh fruit (67%), and cheese (51%).
- In San Diego County, the most frequently reported species was *S. sonnei* (64.2%), followed by *S. flexneri* (21.4%).
- Incidence rates were highest in the Central HHSA Region of San Diego County.

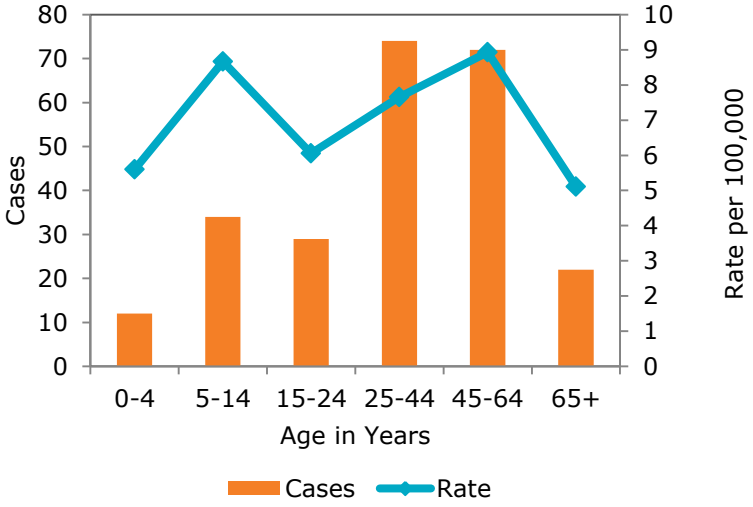
3D computer-generated image of a number of rod-shaped, drug-resistant *Shigella* bacteria.
Photo credit: CDC/ James Archer, Public Health Image Library

SHIGELLOSIS

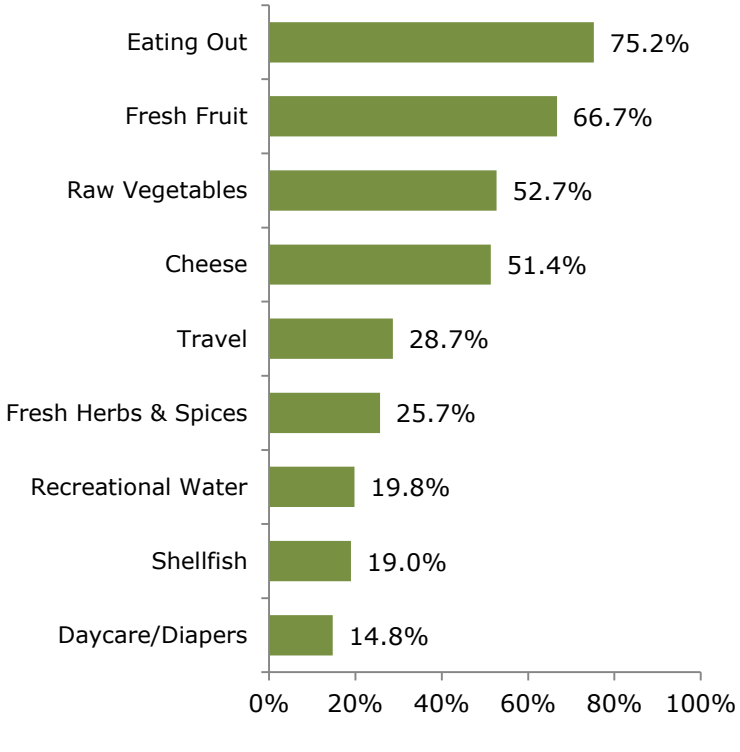
Shigellosis Cases by Month of Onset, San Diego County, 2016



Shigellosis Cases and Rates by Age, San Diego County, 2016



Risk Factors Reported by Shigellosis Cases, San Diego County, 2016



Reported Shigella Species (Serogroups), San Diego County, 2016

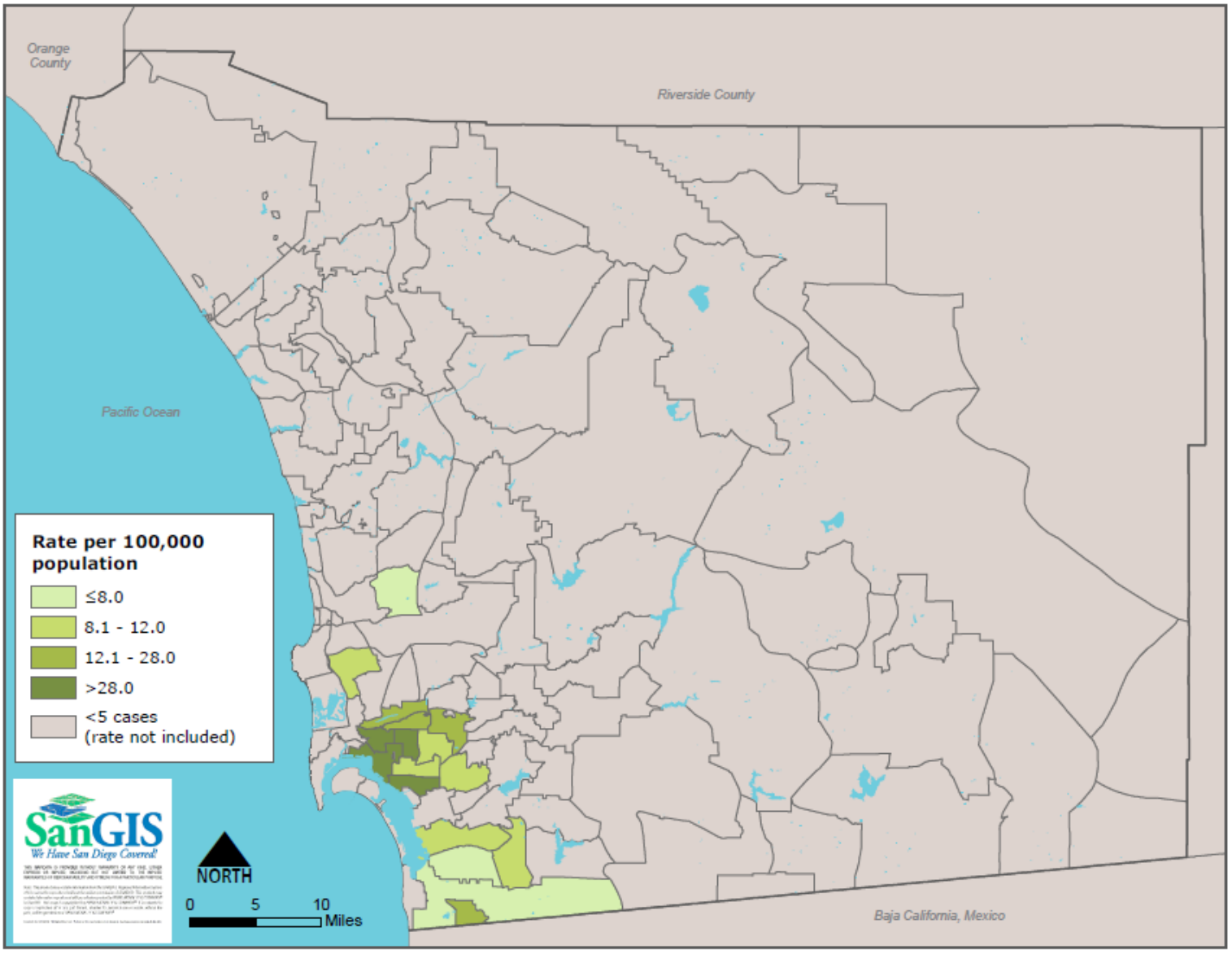
Species	Cases	Percent
S. sonnei	156	64.2
S. flexneri	52	21.4
S. boydii	1	0.4
S. dystenteriae	1	0.4
Unspecified	33	13.6
Total	243	100.0

Notes:

1. Counts include confirmed and probable cases following the CDC/CSTE case criteria. In 2016, the CDC/CSTE case definition was updated to include a case with a positive *Shigella*/EIEC CIDT result as probable rather than suspected.
2. Shigellosis became nationally reportable in 1944.
3. Denominators for risk factor calculations are cases with available information, ranging from 144-181 of 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, 2016**



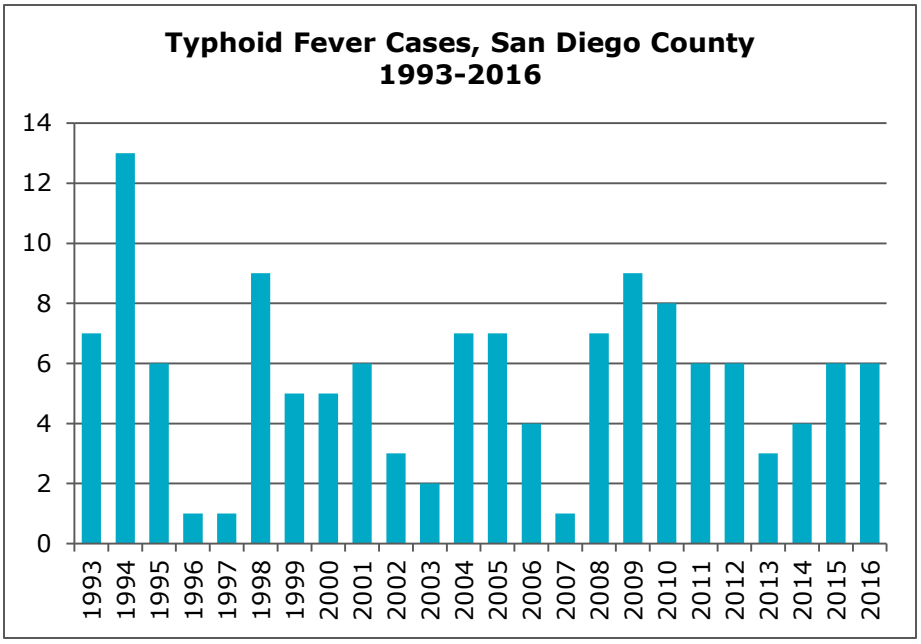
For more information:

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

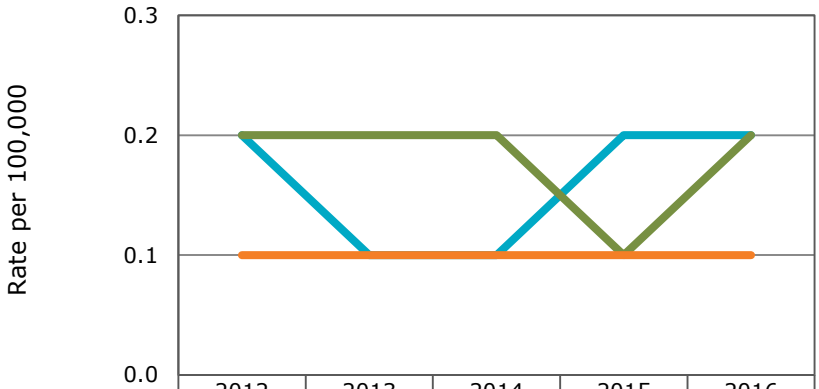
TYPHOID FEVER

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, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	0.2	0.1	0.1	0.2	0.2
California	0.2	0.2	0.2	0.1	0.2
United States	0.1	0.1	0.1	0.1	0.1

Key Points

- In 2016, there were six cases of typhoid fever in San Diego County.
- The incidence rate of typhoid fever in San Diego County has remained low. In 2016, the rate in San Diego County was 0.2 per 100,000 population. This rate is similar to that for California (0.2 per 100,000) and the United States (0.1 per 100,000) in 2016.
- All case-patients reported foreign travel, either for themselves or a household member, or an in-house guest from another country.

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 became nationally notifiable in 1944.

For more information:

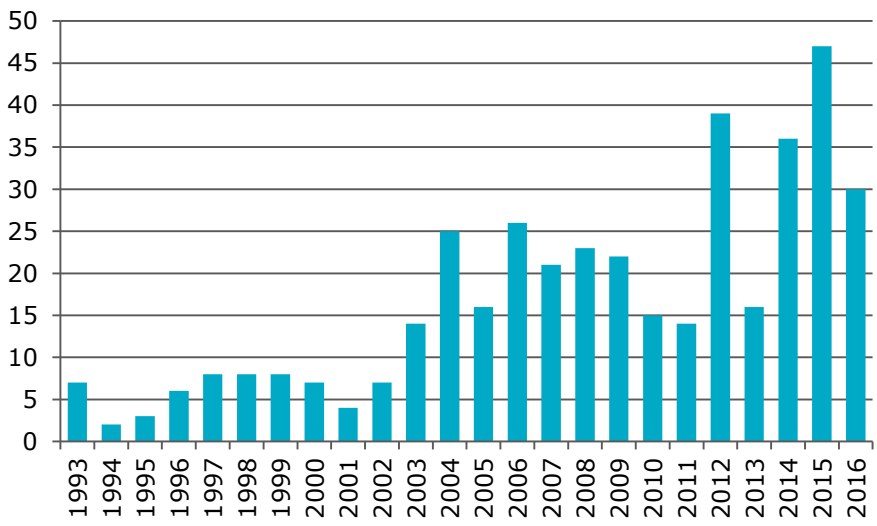
- Centers for Disease Control and Prevention (CDC) Typhoid Fever website
- California Department of Public Health (CDPH) Typhoid Fever website
- CDC/CSTE Typhoid Fever Case Definition
- CDC Health Information for International Travel (the Yellow Book) – Typhoid & Paratyphoid Fever

VIBRIOSIS

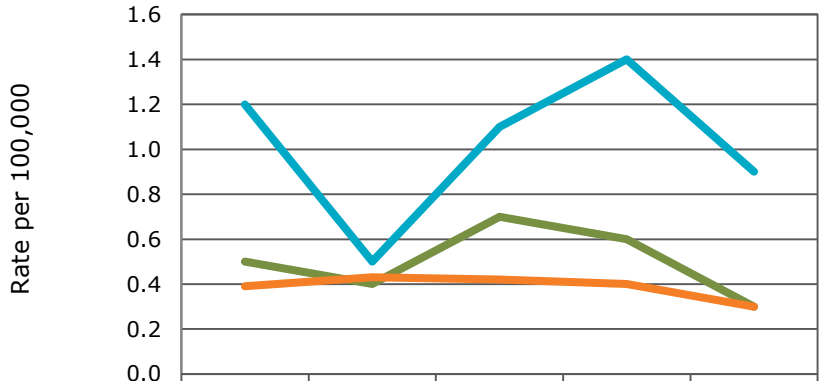
Disease Info

Infectious agent: *Vibrio* non-cholera bacteria including *V. alginolyticus; V. cholerae* non-O1, non-O139; *V. parahaemolyticus;* and *V. vulnificus*
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; can be asymptomatic

Vibriosis Cases, San Diego County 1993-2016



Vibriosis Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	1.2	0.5	1.1	1.4	0.9
California	0.5	0.4	0.7	0.6	0.3
United States	0.4	0.4	0.4	0.4	0.3

Key Points

- In 2016, there were 30 cases of vibriosis in San Diego County. This is a decrease of 36% compared to the previous year (47 cases).
- In San Diego County, the incidence rate of vibriosis in 2016 was 0.9 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 2016.
- 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 (1.4 per 100,000).
- In San Diego County, the most frequently reported species were *Vibrio alginolyticus* (46.7%) and *Vibrio parahaemolyticus* (33.3%).
- The majority of cases were in the non-Hispanic population (60%). These cases were infected with *Vibrio* species associated with both ingestion and wound/ear transmission.

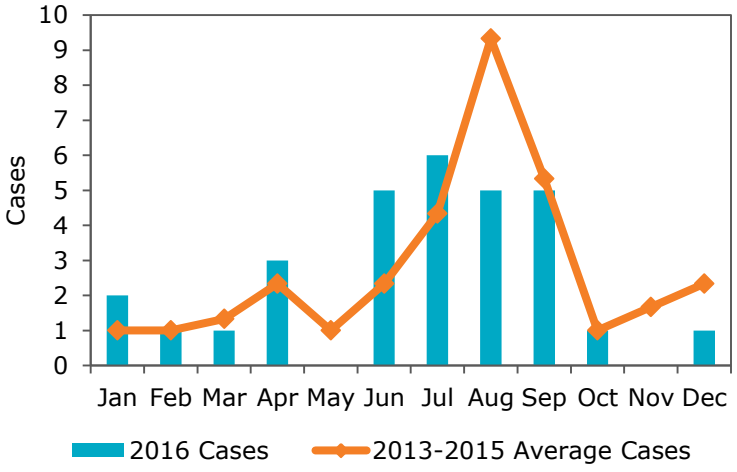
3D computer-generated image of a number of oblong-shaped *Vibrio parahaemolyticus* bacteria.
Photo credit: CDC/ James Archer, Public Health Image Library

For more information:

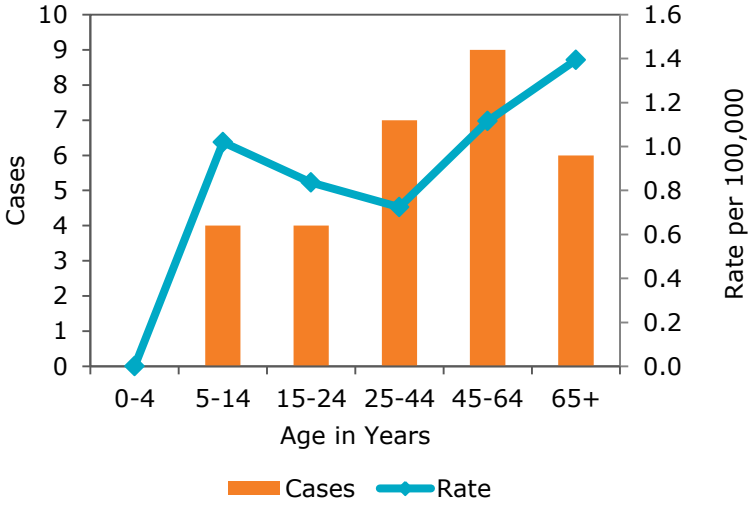
- Centers for Disease Control and Prevention (CDC) Vibriosis website
- California Department of Public Health (CDPH) Vibriosis website
- CDC/CSTE Vibriosis Case Definition

VIBRIOSIS

Vibriosis Cases by Month of Onset, San Diego County, 2016



Vibriosis Cases and Rates by Age, San Diego County, 2016

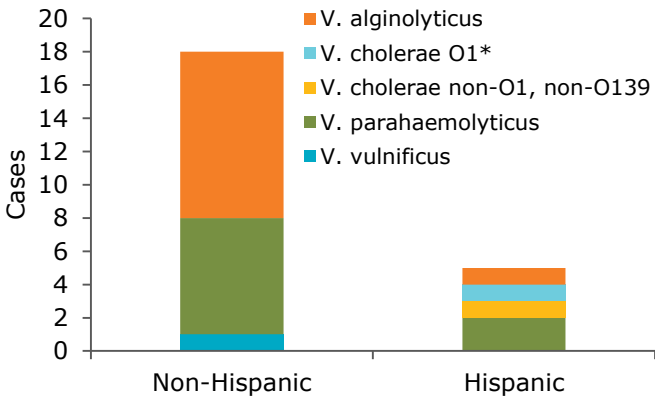


Reported *Vibrio* Species, San Diego County, 2016

Species	Cases	Percent
V. alginolyticus	14	46.7
V. cholerae O1*	1	3.3
V. cholerae non-O1, non-O139	1	3.3
V. parahaemolyticus	10	33.3
V. vulnificus	1	3.3
Unspecified	3	10.0
Total	30	100.0

*Based on negative result for toxin gene by PCR testing at the state laboratory, this case was classified as vibriosis rather than cholera.

Vibriosis Cases by Species and Ethnicity, San Diego County, 2016



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. algionolyticus		●●		●●	
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.

Notes:

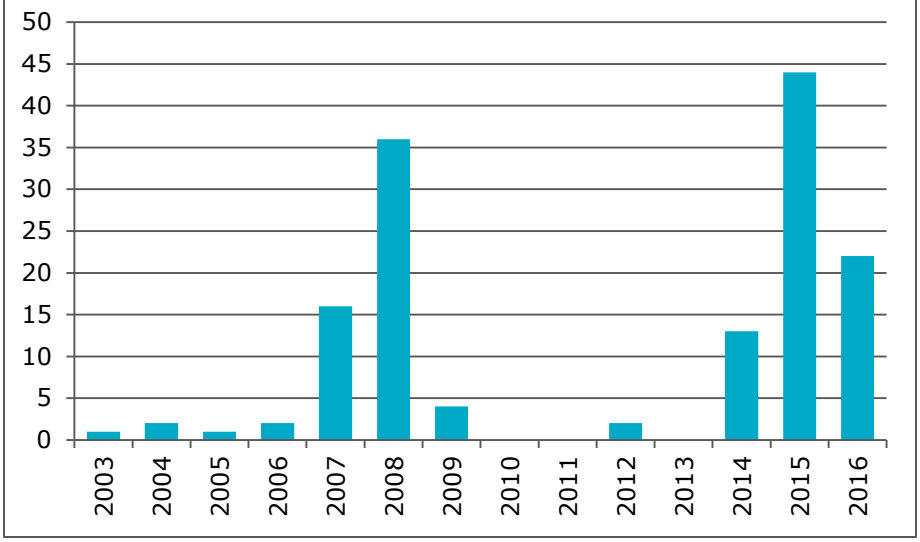
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Vibriosis became a nationally notifiable condition in 2007.

WEST NILE VIRUS INFECTION

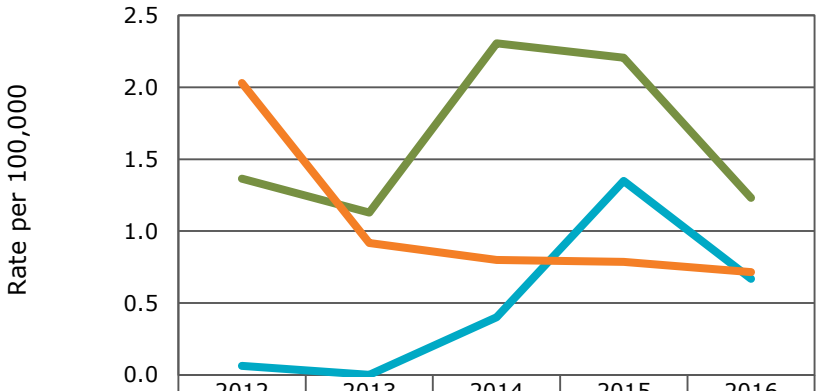
Disease Info

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 Cases, San Diego County, 2003-2016



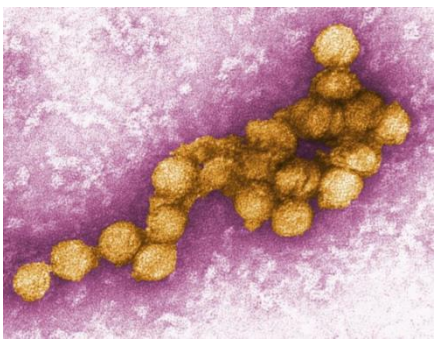
West Nile Virus Infection Incidence, San Diego County, California, and United States, 2012-2016



	2012	2013	2014	2015	2016
San Diego County	0.1	0.0	0.4	1.3	0.7
California	1.4	1.1	2.3	2.2	1.2
United States	2.0	0.9	0.8	0.8	0.7

Key Points

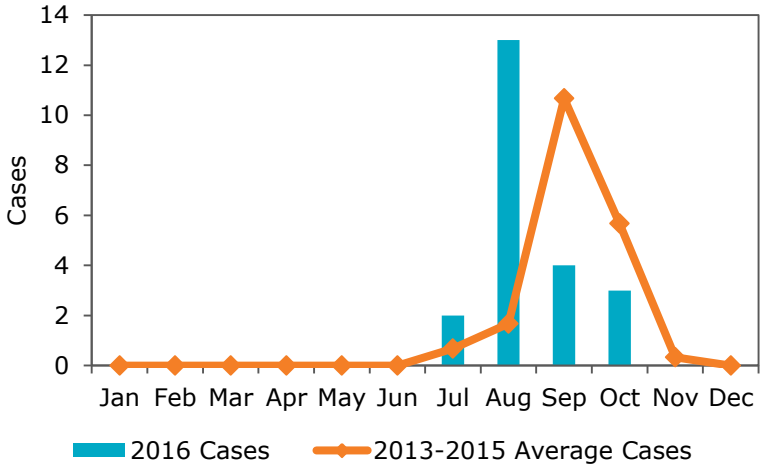
- There were 22 cases of West Nile virus infection among San Diego County residents in 2016, down from a high of 44 in 2015.
- Twenty of the 22 cases could be classified as West Nile disease—16 as neuroinvasive disease and four as non-neuroinvasive disease. The other two cases of West Nile infection were in asymptomatic blood donors.
- Incidence of West Nile virus infection in the United States has decreased since 2012, but incidence in San Diego and the rest of California increased during 2014-2015. California incidence peaked at 2.3 per 100,000 population in 2014, while San Diego County incidence peaked at 1.3 per 100,000 in 2015.
- West Nile virus reports show a distinct seasonality, following local mosquito activity. In San Diego County, the peak is during late summer and early fall.
- The highest count (14) and rate (1.7 per 100,000) among San Diego County cases was in adults aged 45-64 years.
- Among those with West Nile virus disease, 80% were hospitalized and there were two deaths.
- All 2016 cases were likely locally acquired. Only 60% of case-patients could recall mosquito bites.



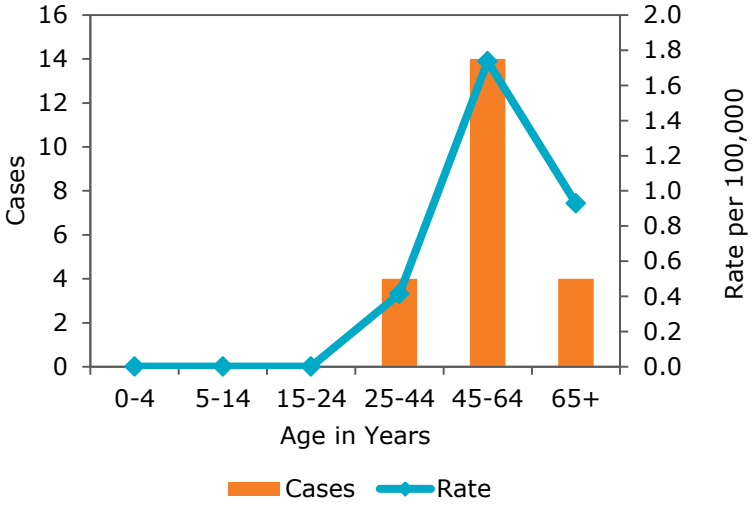
Digitally-colorized transmission electron microscopic (TEM) image of the West Nile virus (WNV)
Photo credit: CDC/Cynthia Goldsmith, Public Health Image Library

WEST NILE VIRUS INFECTION

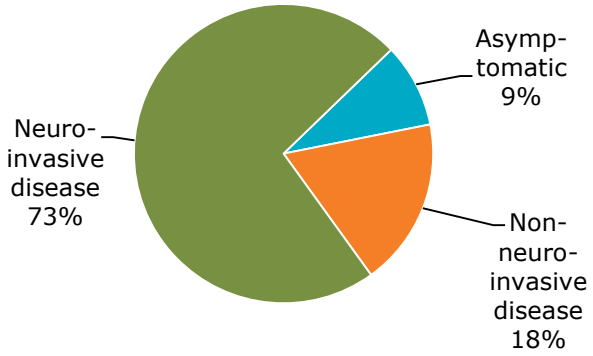
West Nile Virus Infection Cases by Month of Onset, San Diego County, 2016



West Nile Virus Infection Cases and Rates by Age, San Diego County, 2016



Clinical Presentation of West Nile Virus Infection Cases, San Diego County, 2016



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. With the exception of the clinical outcomes presented in the table, the data presented here include all cases of reported West Nile virus infection, including neuroinvasive disease, non-neuroinvasive disease, and asymptomatic infection.
4. True incidence of West Nile virus infection is likely much higher. Symptomatic, and especially severe, cases are more likely to be reported.

Select Characteristics of West Nile Virus Infection Cases, San Diego County, 2016

Characteristic	Cases	Percent
Outcomes – West Nile virus disease (n=20)		
Hospitalization	16	80
Death	2	10
Epidemiology – West Nile virus infection (n=22)		
Likely locally acquired	22	100
Recalled mosquito bites	12	60*

*Of the 20 cases with available information.

For more information:

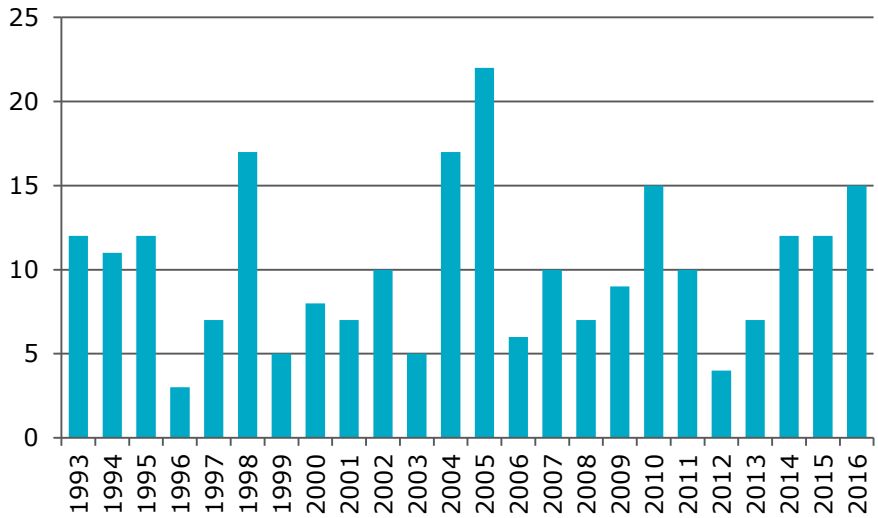
- Centers for Disease Control and Prevention (CDC) West Nile Virus website
- CDC/CSTE West Nile Virus Disease Case Definition
- California West Nile Virus website
- County of San Diego (COSD) West Nile Virus website
- COSD Department of Environmental Health Fight the Bite! website

YERSINIOSIS

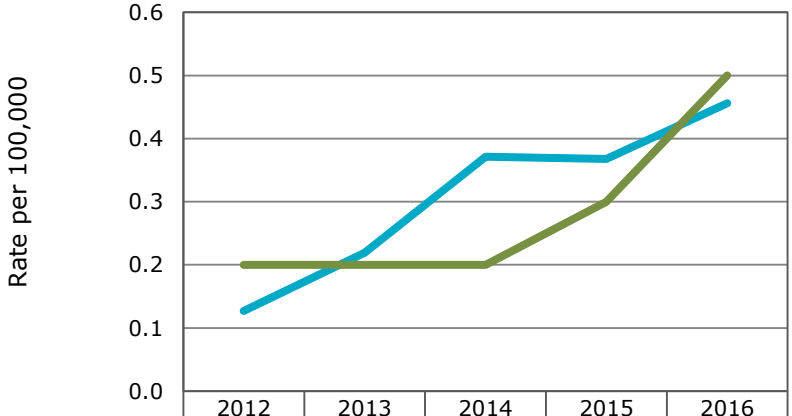
Disease Info

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 Cases, San Diego County 1993-2016



Yersiniosis Incidence, San Diego County and California, 2012-2016

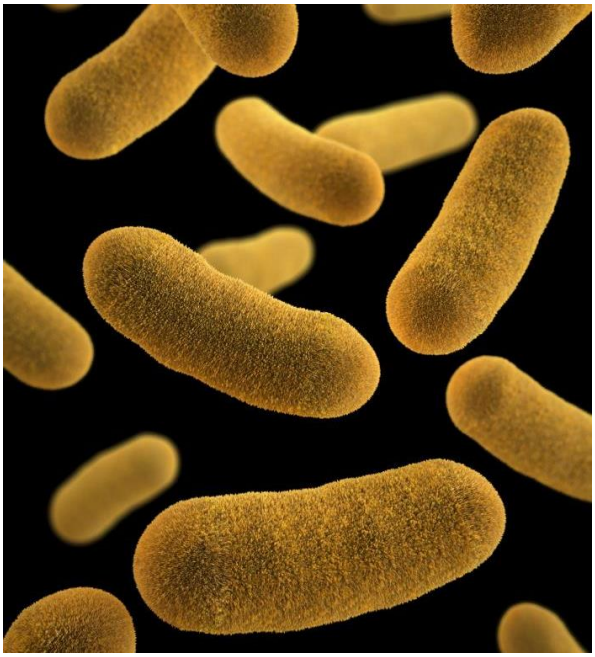


	2012	2013	2014	2015	2016
San Diego County	0.1	0.2	0.4	0.4	0.5
California	0.2	0.2	0.2	0.3	0.5

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

Key Points

- Case counts for yersiniosis have remained low over the last several years. In 2016, there were 15 cases of yersiniosis in San Diego County.
- The incidence rate of yersiniosis in San Diego County is similar to that for the state of California (0.5 per 100,000).
- In 2016, as in previous years, counts were highest in the winter months and fell during the summer.
- In San Diego County, case counts were higher among adults.



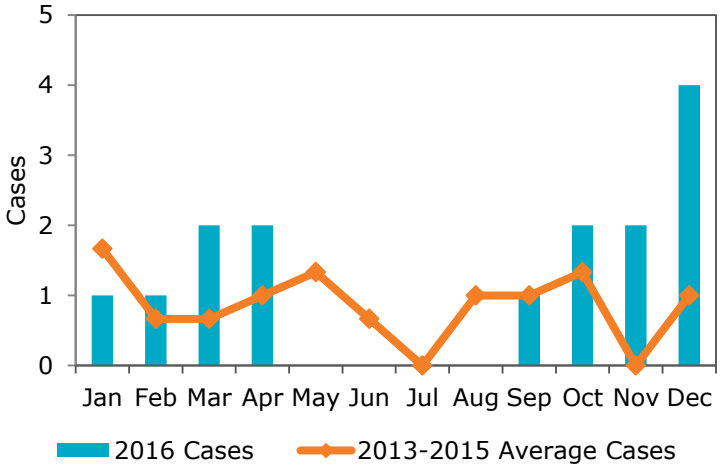
This illustration depicts a three-dimensional (3D) computer-generated image of a number of oblong-shaped, Yersinia enterocolitica bacteria. The artistic recreation was based upon scanning electron microscopic (SEM) imagery.
Photo credit: CDC/ James Archer, Jennifer Oosthuizen, Public Health Image Library

For more information:

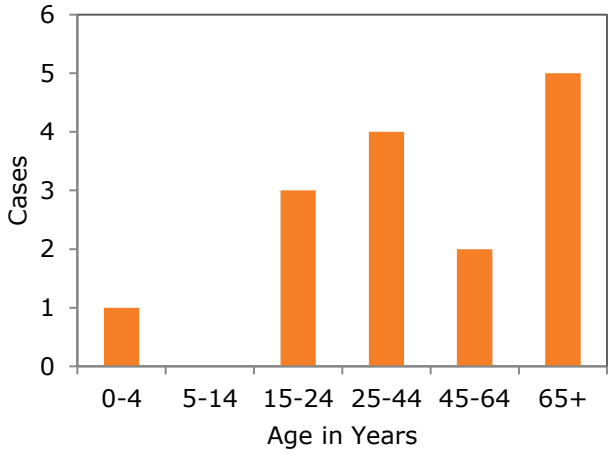
- Centers for Disease Control and Prevention (CDC) Yersiniosis website

YERSINIOSIS

Yersiniosis Cases by Month of Onset, San Diego County, 2016



Yersiniosis Cases by Age, San Diego County, 2016



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.

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

	Case Count	Incidence Rate
San Diego County	83	2.5
California	394	1.0
United States	4,757	1.5

San Diego County Zika Cases, 2016

93% SYMPTOMATIC

26% VISITED EMERGENCY ROOM

3% HOSPITALIZED

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
- 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

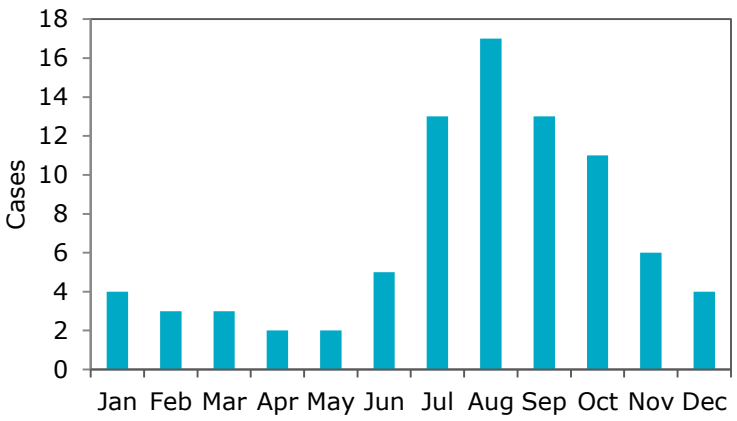
Key Points

- In 2016, there were 83 cases of Zika virus infection in San Diego County.
- The incidence rate of Zika virus infection was higher in San Diego County (2.5 per 100,000) than in California (1.0 per 100,000) and the United States (1.5 per 100,000).
- In San Diego County, the majority (93%) of cases reported were symptomatic. Asymptomatic cases are less likely to be detected.
- In 2016, 26% of case-patients visited an emergency department for their illness; three percent of case-patients were hospitalized.
- Zika case counts peaked in the summer months. In 2016, 52% of cases occurred during the months of July-September.
- In San Diego County, Zika case counts and rates were highest among persons ages 25-44 years (42 cases, incidence rate of 4.3 per 100,000 population).
- In 2016, eight cases of Zika virus infection were among pregnant women.
- The majority of San Diego County cases (98%) can be attributed to travel outside of the United States. Commonly reported travel locations included Mexico, Central America, South America, and the Caribbean.
- Two case-patients (2%) were suspected to have acquired the infection through sexual transmission.

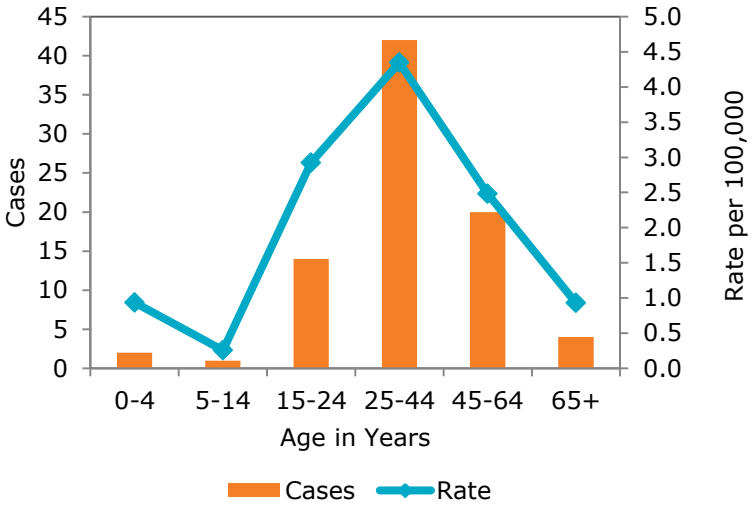
Female *Aedes albopictus* mosquito feeding on a human host. Photo credit: CDC/James Gatheny, Public Health Image Library

ZIKA VIRUS INFECTION

Zika Cases by Month of Onset, San Diego County, 2016



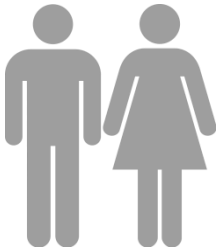
Zika Cases and Rates by Age, San Diego County, 2016



8 PREGNANT FEMALES

17% of female cases were pregnant

98% REPORTED TRAVEL OUTSIDE OF THE U.S.



2% SUSPECTED SEXUAL TRANSMISSION

Travel Locations Reported By Zika Case-Patients and Sex Partners, San Diego County, 2016

Location	Cases	Percent
Africa	1	1.2
Asia/South Pacific	4	4.8
Caribbean	15	18.1
Central America	20	24.1
Mexico	33	39.8
South America	13	15.7

Notes:

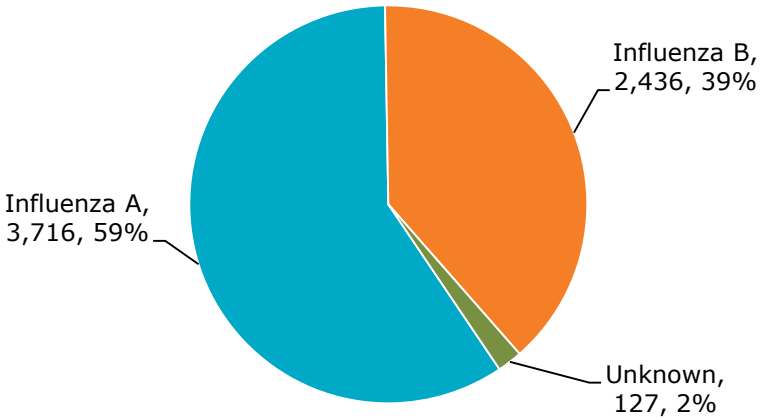
1. Counts include confirmed and probable cases following the CDC/CSTE case criteria.
2. Zika virus infections became nationally notifiable in 2016.
3. Denominators for emergency department visits and hospitalization calculations are cases with available information, ranging from 78-80 of total cases.
4. Travel locations add to more than 100% due to case-patients reporting travel to multiple locations during the exposure period.
5. Travel to the U.S. Virgin Islands and Puerto Rico is included in counts for travel to the Caribbean.
6. Two case-patients with suspected sexual transmission reported no travel for themselves, but did report travel for their sex partners.

INFLUENZA SEASON SUMMARY, 2015-16

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 2015-16 N=6,279



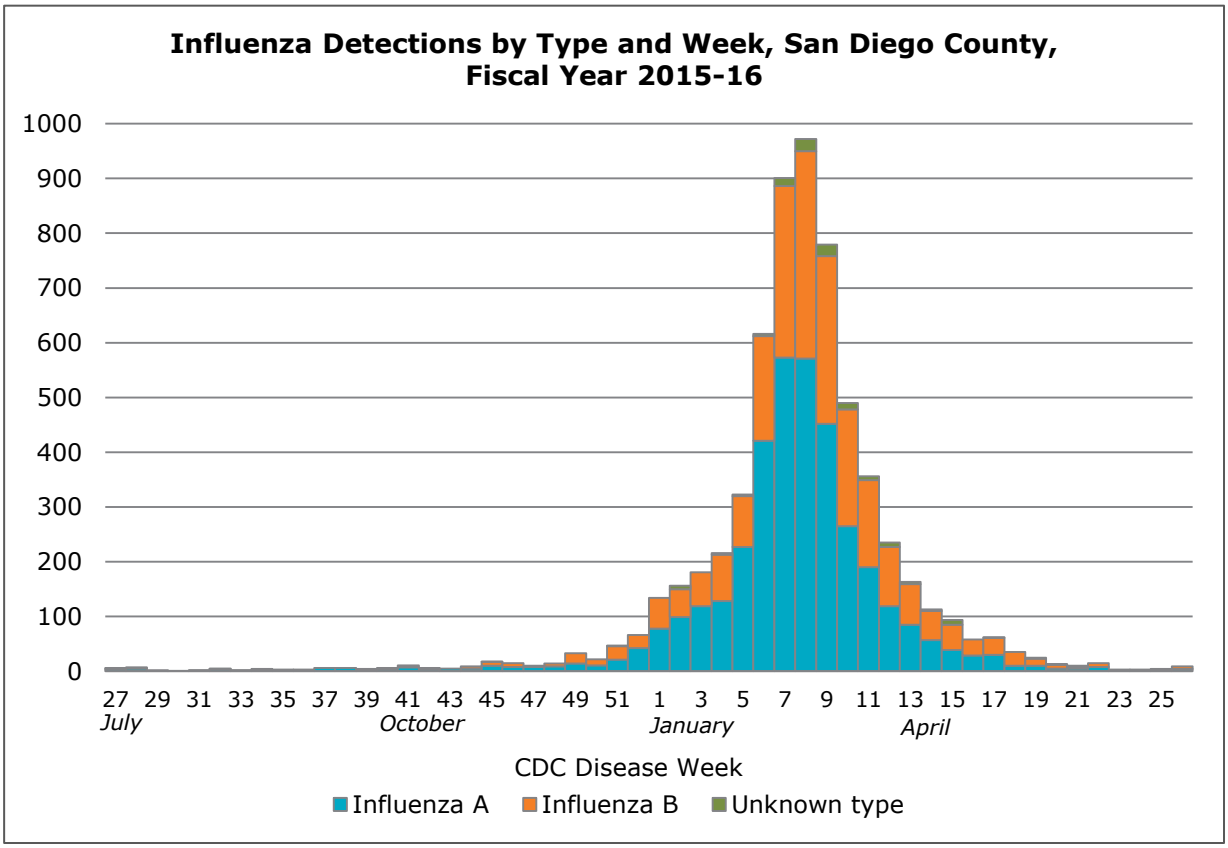
Subtypes of Influenza Detections, San Diego County, Fiscal Year 2015-16

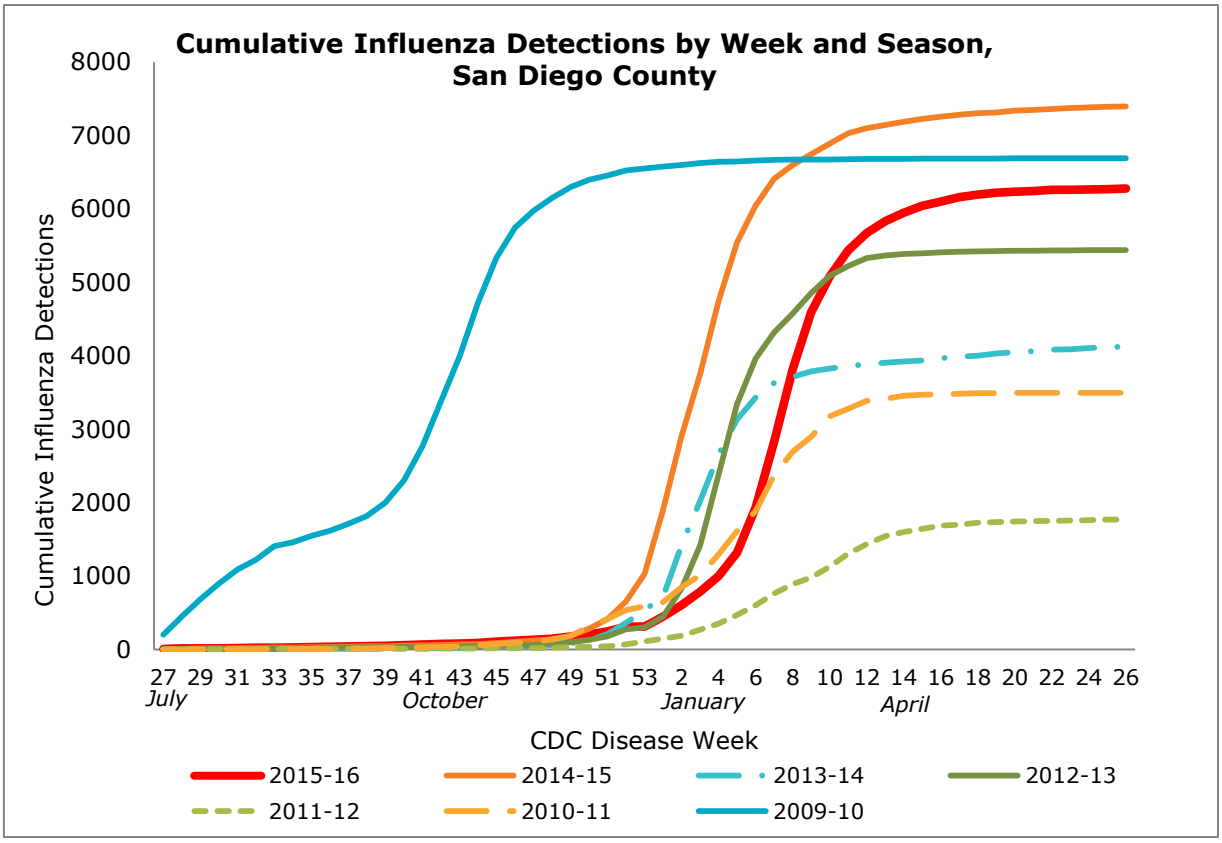
	Detections	Percent
Influenza A		
Total Detections	3,716	100.0
Subtyped	436	11.7
Among those subtyped		
H3N2	139	31.9
H1N1pdm09	297	68.1
Influenza B		
Total Detections	2,436	100.0
Subtyped	85	3.5
Among those subtyped		
Yamagata	55	64.7
Victoria	30	35.3

Key Points

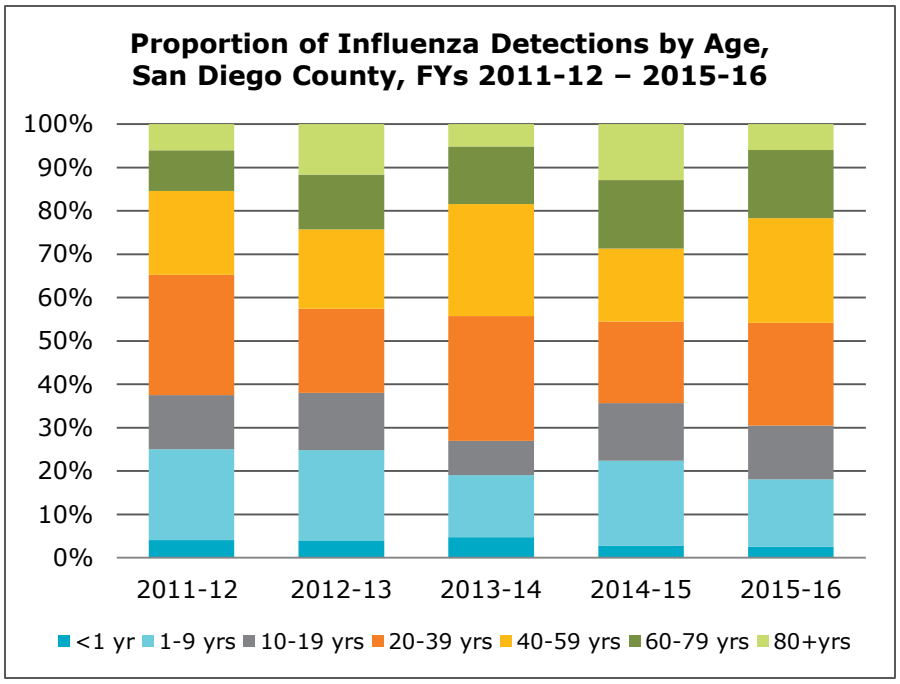
- There were 6,279 influenza cases reported in San Diego County during the 2015-16 season (fiscal year 2015-16). This was the third highest cumulative count in the past seven seasons.
- Nearly 60% of the detections were influenza A, while almost 40% were influenza B. A small percentage of influenza detections were not typed. This was a higher percentage of influenza B than in the previous five seasons.
- Among the influenza A virus detections that were subtyped (12%), almost 70% were H1N1. The strain of H1N1 that was circulating in 2015-16 was first detected in 2009 in California, was responsible for a pandemic, and has since replaced previously circulating strains of H1N1 as a cause of seasonal influenza.
- Of the influenza B virus detections that were subtyped (3.5%), 65% were of the Yamagata lineage.
- The 2015-16 influenza season peaked in mid to late February in San Diego County.
- Although people aged 65 and older remain at higher risk for influenza complications, a smaller percentage of the total detections and deaths in 2015-16 were among this age group. This is not unexpected in seasons where pandemic H1N1 is the dominant influenza A strain; this strain tends to cause more serious illness in younger adult populations than other strains.
- There were 120 influenza-related cases requiring intensive care and 68 influenza-related deaths during the 2015-16 season in San Diego County.

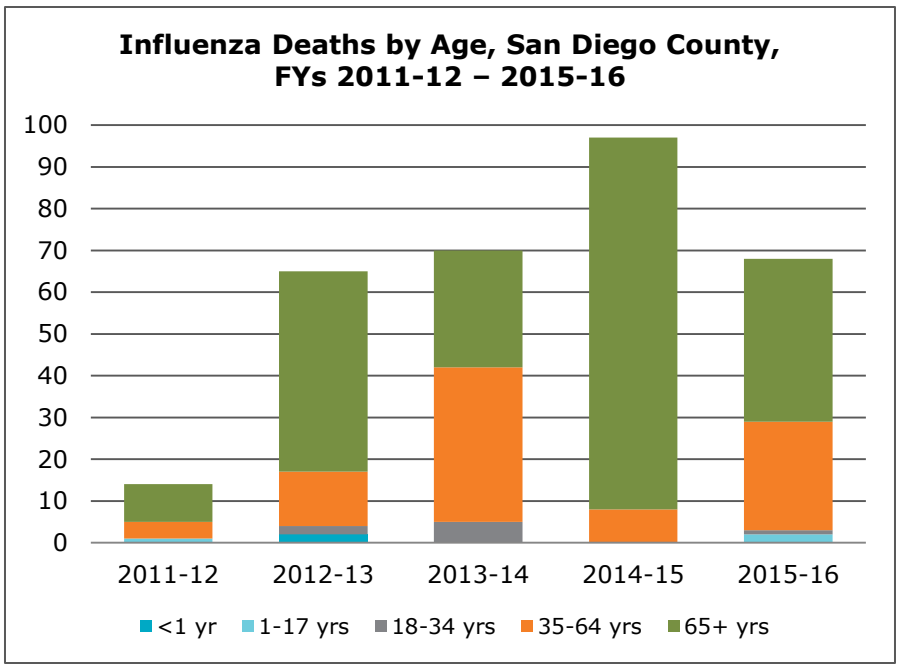
INFLUENZA SEASON SUMMARY, 2015-16





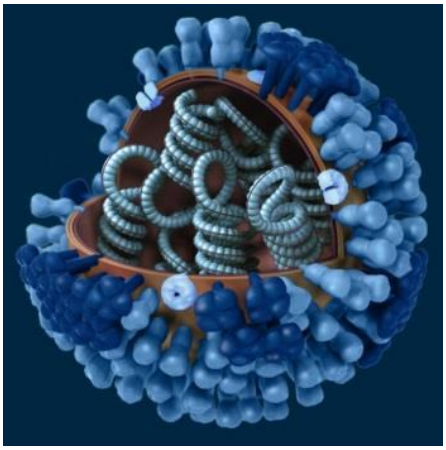
INFLUENZA SEASON SUMMARY, 2015-16





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

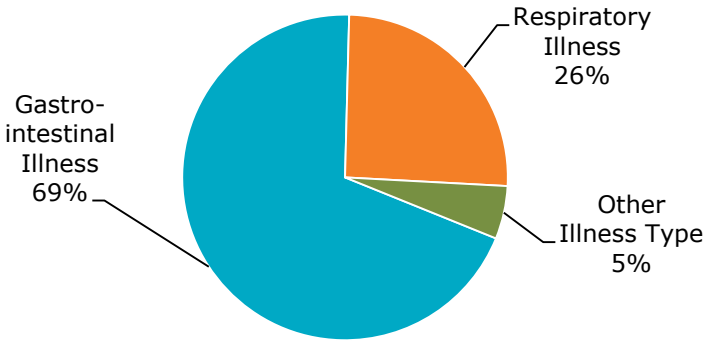
Notes:

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.

OUTBREAKS, 2016

114 **Outbreaks Investigated San Diego County 2016**

Outbreaks by Clinical Syndrome, San Diego County, 2016



Mode of Transmission

28 Foodborne

2 Waterborne

Outbreaks by Clinical Syndrome and Etiology, San Diego County, 2016

Outbreak Etiology	Outbreaks
Gastrointestinal Illness (n=79)	
Norovirus	46
Gastroenteritis (undetermined etiology)	25
Clostridium difficile	2
Salmonellosis	2
Shigellosis	2
Cryptosporidiosis	1
Shiga toxin-producing *E. coli*	1
Respiratory Illness (n=29)	
Influenza	23
Respiratory Illness (undetermined etiology)	5
Legionellosis	1
Other Illness Type (n=6)	
Chickenpox	4
Mumps	2

Key Points

- There were 114 outbreaks investigated by the Epidemiology and Immunization Services Branch in 2016.
- The majority (69%) of the outbreaks caused gastrointestinal (GI) symptoms among those affected. The most common etiology of these GI outbreaks was norovirus (58%). Etiology was undetermined for 25 of 79 GI outbreaks.
- In just over a quarter of the outbreaks, the ill experienced respiratory symptoms. Most of these outbreaks (23 of 29) were caused by influenza.
- There were six outbreaks of other (non-influenza) vaccine-preventable diseases, four chickenpox outbreaks and two mumps outbreaks.
- Twenty-eight outbreaks (25%) were attributed to foodborne transmission. These included 15 norovirus, two salmonellosis, one shigellosis, and 10 outbreaks with unknown etiology.
- One cryptosporidiosis and one legionellosis outbreak were attributed to waterborne transmission.

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 criteria related to those outbreaks.
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 outbreak of hepatitis A in San Diego County began in late 2016, continuing through 2017; that outbreak is not included in this report.

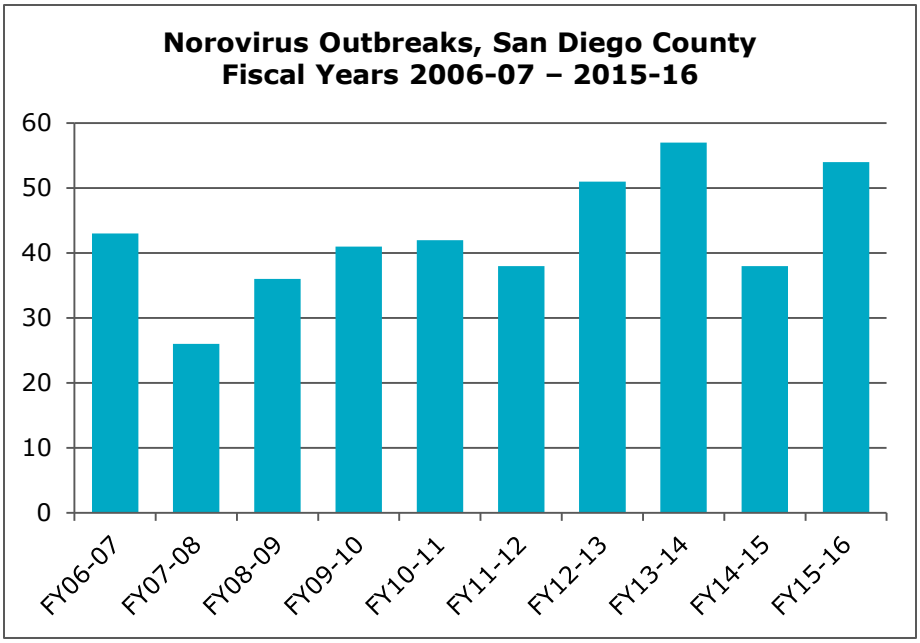
For more information:

- 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, 2015-16

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:

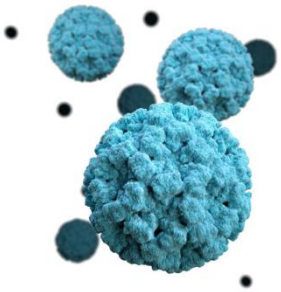
1. A confirmed norovirus outbreak requires that at least two cases are laboratory-confirmed; a probable norovirus outbreak requires one laboratory-confirmed case; in a suspect norovirus outbreak, at least 50% of cases report vomiting, average incubation is 24-48 hours, and average duration of illness 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

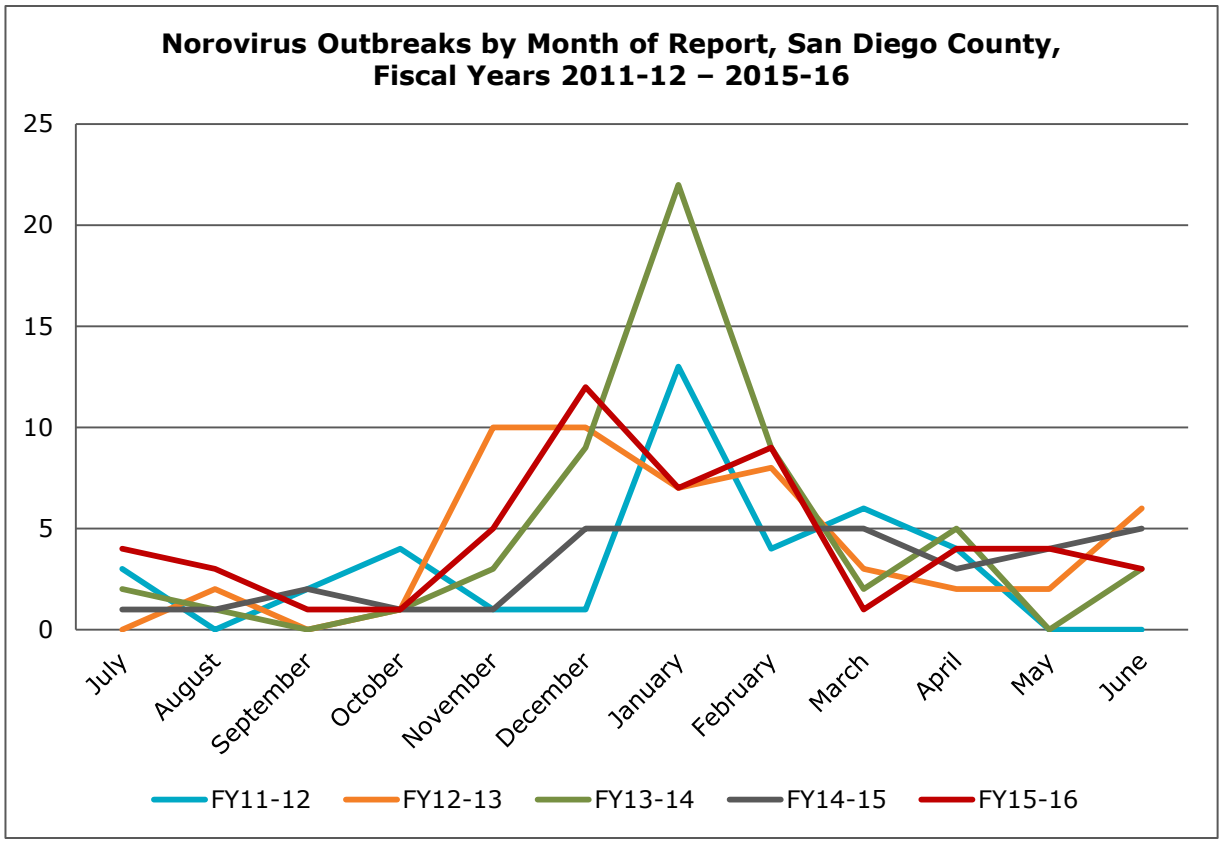
Key Points

- There were 54 norovirus outbreaks investigated by the Epidemiology Program in Fiscal Year (FY) 2015-16, somewhat higher than the average of 45 outbreaks over the previous five seasons.
- In 43% of the outbreaks, at least one human specimen tested positive for norovirus. The remaining outbreaks were identified 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 2015-16, the peak in San Diego County was in December, when 12 norovirus outbreaks were reported.
- In FY 2015-16, 33% of the 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, 78% were in congregate living facilities, such as long-term care or assisted living facilities. An additional 11% were in schools or childcare facilities.
- The median number of cases per norovirus outbreak in FY 2015-16 was 11, with a range of 2-108 cases.



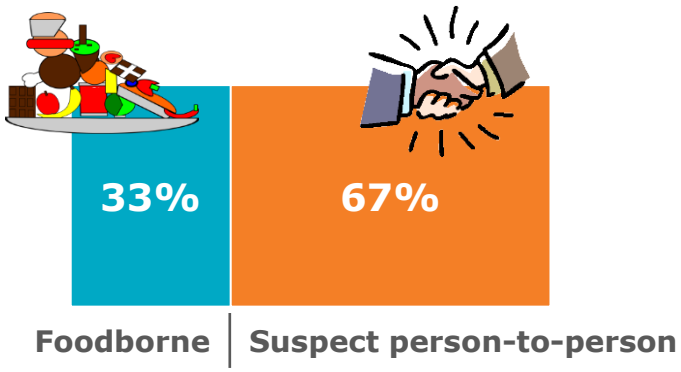
3D representation of norovirus virions based on electron microscopic imagery.
Illustrator: Alissa Eckert, MS, CDC Public Health Image Library

NOROVIRUS OUTBREAKS, 2015-16

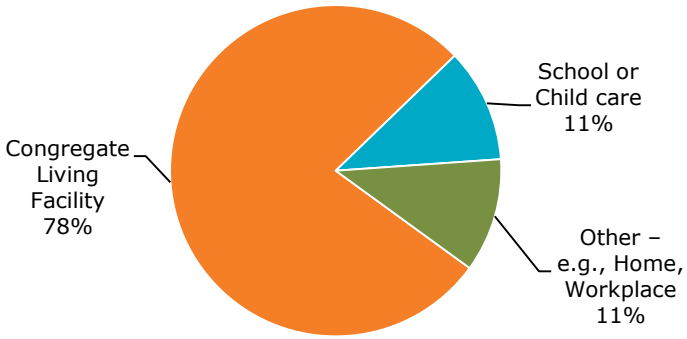


Norovirus Outbreaks, San Diego County, Fiscal Year 2015-16

Mode of Transmission



Location of Suspect Person-to-Person Norovirus Outbreaks

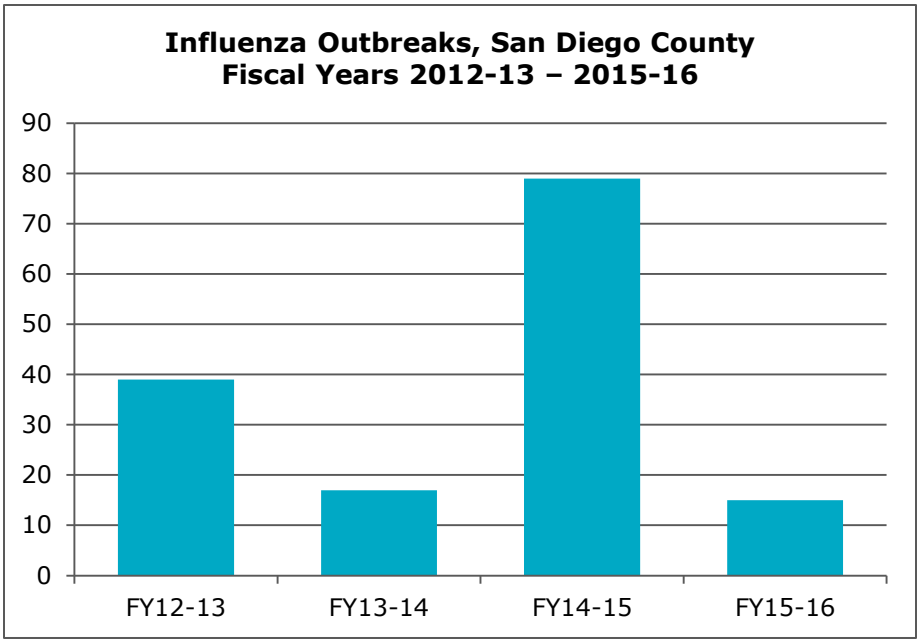


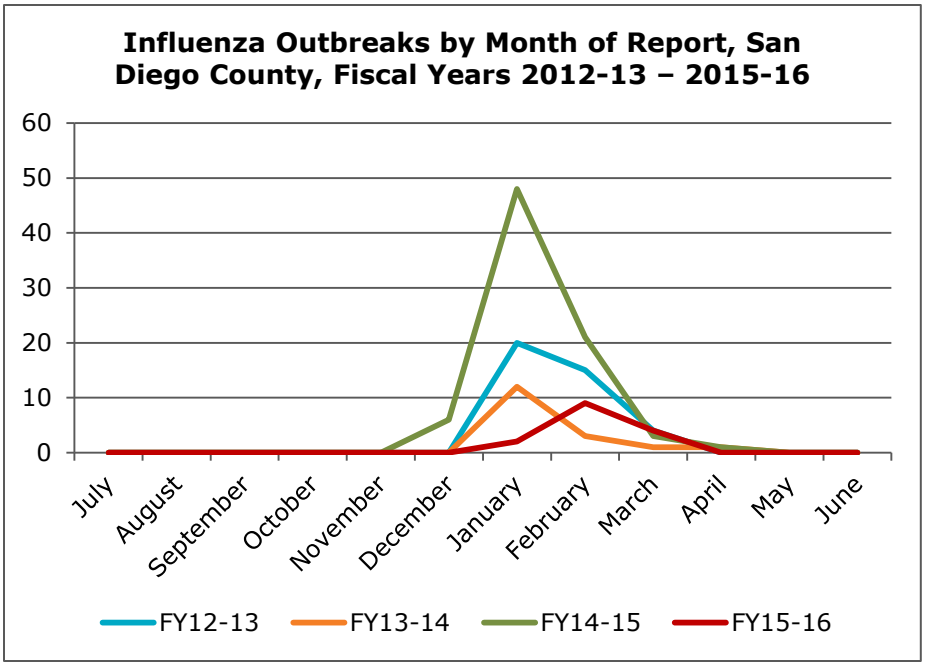
Congregate Living Facilities include long-term care facilities, assisted living facilities, independent living facilities for seniors.

Number of cases per outbreak

Median: 11
Range: 2-108

INFLUENZA OUTBREAKS, 2015-16





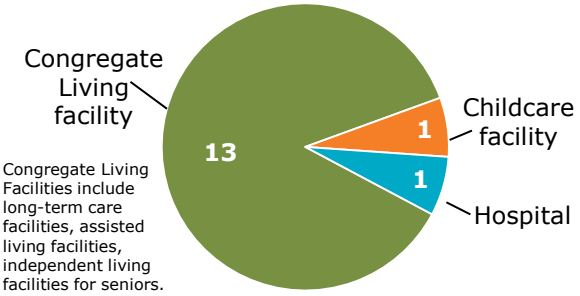
Key Points

- There were 15 influenza outbreaks investigated by the Epidemiology Program in San Diego County in Fiscal Year (FY) 2015-16, down from a high of 79 outbreaks in FY 2014-15.
- Most influenza outbreaks (87% in FY 2015-16) are in congregate living facilities, most often those serving the elderly.
- In seasons such as 2015-16, when the predominant circulating influenza A virus is H1N1, there tend to be fewer outbreaks since the elderly population is less severely affected by this strain.
- The peak number of influenza outbreaks was in February; the peak was in January the previous three seasons.
- In FY 2015-16, the median number of cases per influenza outbreak was four, with a range of 2-36 cases.

Number of cases per outbreak

Median: 4
Range: 2-36

87% of outbreaks were in congregate living facilities



Congregate Living Facilities include long-term care facilities, assisted living facilities, 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	5	788	6	161	35	23	75	399
Gender								
Female	2	371	5	43	9	12	27	165
Male	3	414	1	116	26	10	47	233
Other/Transgender	0	0	0	1	0	0	0	0
Unknown/Missing	0	3	0	1	0	1	1	1
Age in Years								
0-4	0	68	0	0	5	0	2	53
5-14	0	95	0	2	6	0	2	89
15-24	0	108	0	10	6	1	3	39
25-44	2	204	2	43	7	15	14	106
45-64	2	203	1	68	9	7	25	78
65+	1	109	3	38	2	0	29	34
Unknown/Missing	0	1	0	0	0	0	0	0
Race/Ethnicity								
American Indian/Alaska Native	0	0	0	0	0	0	0	1
Asian	1	12	0	13	3	1	4	8
Black/African-American	0	5	0	8	1	0	3	83
Hispanic/Latino	2	72	2	42	12	9	7	50
Native Hawaiian/Other Pacific Islander	0	0	0	1	0	0	1	1
White	2	67	3	41	15	8	31	178
Other	0	21	1	3	1	0	0	11
Two or More Races	0	0	0	0	0	1	1	2
Unknown/Missing	0	611	0	53	3	4	28	65
HHSA Service Region								
Central	1	119	1	18	7	5	10	146
East	1	97	0	17	6	0	5	95
North Central	1	113	1	16	8	4	14	46
North Coastal	0	101	2	13	6	5	17	38
North Inland	1	127	1	19	7	4	17	34
South	1	155	1	75	1	5	9	35
Unknown/Missing	0	76	0	3	0	0	3	5

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	26	3	872	2,616	53	22	10
Gender							
Female	13	0	377	838	18	10	4
Male	12	3	485	1,728	35	12	6
Other/Transgender	0	0	2	0	0	0	0
Unknown/Missing	1	0	8	50	0	0	0
Age in Years							
0-4	0	0	2	6	0	1	1
5-14	0	0	8	10	0	0	1
15-24	2	0	55	209	0	1	1
25-44	12	0	358	835	2	4	5
45-64	10	3	333	1,234	23	4	0
65+	2	0	113	306	28	12	1
Unknown/Missing	0	0	3	16	0	0	1
Race/Ethnicity							
American Indian/Alaska Native	0	0	1	2	0	0	0
Asian	1	0	79	11	1	5	1
Black/African-American	0	0	22	15	1	0	0
Hispanic/Latino	7	3	20	89	13	6	1
Native Hawaiian/Other Pacific Islander	0	0	1	0	0	0	0
White	8	0	26	162	29	11	5
Other	3	0	33	36	0	0	0
Two or More Races	1	0	1	0	1	0	0
Unknown/Missing	6	0	689	2,301	8	0	3
HHSA Service Region							
Central	3	0	177	432	4	4	0
East	6	2	60	315	12	2	0
North Central	6	0	171	225	16	4	4
North Coastal	2	0	59	290	9	5	1
North Inland	4	0	112	262	8	2	3
South	3	1	115	512	4	5	1
Unknown/Missing	2	0	178	580	0	0	1

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	12	0	217	2	23	411	538
Gender							
Female	4	0	99	0	11	216	269
Male	8	0	117	2	11	195	267
Other/Transgender	0	0	1	0	0	0	0
Unknown/Missing	0	0	0	0	1	0	2
Age in Years							
0-4	1	0	36	0	0	150	89
5-14	0	0	12	0	0	153	53
15-24	2	0	24	2	18	76	71
25-44	3	0	60	0	4	9	143
45-64	3	0	51	0	1	14	106
65+	3	0	33	0	0	9	76
Unknown/Missing	0	0	1	0	0	0	0
Race/Ethnicity							
American Indian/Alaska Native	0	0	1	0	0	0	0
Asian	0	0	7	0	2	12	21
Black/African-American	6	0	2	0	0	3	17
Hispanic/Latino	3	0	32	1	1	158	167
Native Hawaiian/Other Pacific Islander	0	0	0	0	0	1	1
White	3	0	60	0	14	188	260
Other	0	0	4	1	0	10	4
Two or More Races	0	0	1	0	2	4	6
Unknown/Missing	0	0	110	0	4	35	62
HHSA Service Region							
Central	5	0	27	0	5	33	80
East	2	0	25	0	1	32	92
North Central	3	0	29	2	15	37	91
North Coastal	0	0	43	0	0	89	78
North Inland	1	0	48	0	2	139	91
South	1	0	34	0	0	78	102
Unknown/Missing	0	0	11	0	0	3	4

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	60	243	6	30	22	15	83
Gender							
Female	26	80	2	13	11	7	48
Male	33	162	4	17	11	8	35
Other/Transgender	0	1	0	0	0	0	0
Unknown/Missing	1	0	0	0	0	0	0
Age in Years							
0-4	18	12	1	0	0	1	2
5-14	10	34	0	4	0	0	1
15-24	13	29	2	4	0	3	14
25-44	5	74	1	7	4	4	42
45-64	9	72	2	9	14	2	20
65+	5	22	0	6	4	5	4
Unknown/Missing	0	0	0	0	0	0	0
Race/Ethnicity							
American Indian/Alaska Native	1	1	0	0	0	0	0
Asian	5	3	2	2	0	0	5
Black/African-American	1	12	0	0	0	0	0
Hispanic/Latino	18	94	4	6	6	2	43
Native Hawaiian/Other Pacific Islander	0	1	0	0	0	0	0
White	24	110	0	17	14	4	29
Other	0	3	0	0	1	1	1
Two or More Races	2	2	0	0	0	0	1
Unknown/Missing	9	17	0	5	1	8	4
HHSA Service Region							
Central	5	106	0	4	4	2	18
East	6	20	0	8	1	0	8
North Central	10	36	1	6	3	4	13
North Coastal	6	26	3	5	8	4	18
North Inland	19	16	1	6	6	1	8
South	8	30	1	1	0	2	16
Unknown/Missing	6	9	0	0	0	2	2

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	⊘!

REPORTABLE DISEASES AND CONDITIONS

Disease Name	Urgency	Disease Name	Urgency
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 ⊘✉
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 ⊘✉

REPORTABLE DISEASES AND CONDITIONS

Disease Name	Urgency	Disease Name	Urgency
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 ⊘✉
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):

* 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

CDPH 110a (01/18)

RESOURCES

United States Disease Data

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