Annual Report of Communicable Diseases in San Francisco 2015

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Communicable Disease Control & Prevention
San Francisco Department of Public Health

Cora Hoover, MD, MPH
Director, Communicable Disease Control and Prevention
San Francisco Department of Public Health

Tomás J. Aragón, MD, DrPH
Health Officer, City and County of San Francisco
Director, Population Health Division
San Francisco Department of Public Health

Barbara A. Garcia, MPA
Director
San Francisco Department of Public Health

POPULATION HEALTH DIVISION
SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH

This annual report summarizes notifiable disease reports received by the Communicable Disease Control Unit (CDCU) of the San Francisco Department of Public Health (SFDPH) during 2015. In addition, six diseases were selected for demographic profiling on the basis of the annual burden and severity of disease, public health impact, and specific interest to community health programs. Readers can access previous reports at http://www.sfcdcp.org for historical context of disease incidence in San Francisco. Notifiable disease reports managed by other SFDPH sections are not represented here, i.e., tuberculosis, human immunodeficiency virus (HIV), acquired immunodeficiency syndrome (AIDS) and sexually transmitted diseases (STDs) which are managed, respectively, by Tuberculosis Control, HIV Surveillance and STD Prevention and Control Sections.

Table of Contents

I. **Methods and Definitions** 3

II. **Notes on 2015 Surveillance Data** 8

III. **TABLE 1**: Frequency of Reportable Diseases in San Francisco, 2015 20

IV. **TABLE 2**: Frequency and Unadjusted Rates for Six Selected Diseases by Age, San Francisco, 2015 21

V. **TABLE 3**: Frequency and Unadjusted Rates for Six Selected Diseases by Sex, San Francisco, 2015 22

VI. **TABLE 4**: Frequency and Unadjusted Rates for Four Selected Diseases by Race/Ethnicity, San Francisco, 2015 23

VII. **TABLE 5**: San Francisco Population Estimates by Sex, Age and Race/Ethnicity, 2015 24

VIII. **Appendices**. 25

a. Notifiable Disease - Historical Changes (2004 - 2015) 25

b. Definitions for Select Notifiable Diseases. 27

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San Francisco Department of Public Health at 101 Grove Street (1935)

Methods and Definitions

Data Collection

This report includes confirmed and probable reports of disease among San Francisco residents reported to SFDPH from January 1, 2015 through December 31, 2015*. San Francisco health care providers, laboratories and other mandated reporters are required under Title 17, California Code of Regulations (CCR) (§2500, §2505, §2593, §2641-2643, §2800-2812) [1], to notify the local health authority of the diagnosis, detection or suspicion of certain diseases and conditions. Reports are confidentially received by fax, telephone, postal mail, or secure electronic file transfer. Reports by fax and postal mail are generally submitted using the California Confidential Morbidity Report (CMR) form[2]. Limited case demographic and clinical information is provided on the CMR. Depending on the disease or condition, disease control staff attempt to contact the health care provider, laboratory and/or patient for follow-up and implementation of disease control measures. Clinical and risk factor data are subsequently collected according to departmental and state protocols. Data were managed with locally designed databases.

The chronic hepatitides are managed by the Viral Hepatitis Surveillance Team.

Notifiable diseases managed by other SFDPH sections (HIV Surveillance, Environmental Health, STD Prevention and Control, and Tuberculosis Control) are not presented in this report:

- Acquired Immune Deficiency Syndrome (AIDS)
- Chancroid
- *Chlamydia trachomatis* infections
- Gonococcal Infections
- Hepatitis B, chronic
- Hepatitis C infection, past or present
- Human Immunodeficiency Virus (HIV)
- Lymphogranuloma Venereum (LGV)
- Pelvic Inflammatory Disease (PID)
- Pesticide-related illness or injury
- Syphilis
- Tuberculosis

*Disease incidents of confirmed and probable diseases were included in this report for all diseases, except animal rabies (only confirmed cases were reported), salmonellosis (confirmed, probable, and suspect cases), and shigellosis (confirmed, probable, and suspect cases). The laboratory criteria for case definitions for these suspect cases of disease include detection from a clinical specimen using a non-culture based method. See Notes on Surveillance Data for further discussion of culture-independent diagnostic testing.

Population Under Surveillance

CDCU reports cases of CCR Title 17 reportable diseases among residents living in the City and County of San Francisco. Cases of reportable disease reported to CDCU occurring in non-residents are considered “out of jurisdiction,” referred to their respective jurisdictions of residency for follow-up and not included in this report.

San Francisco population estimates were obtained from the California Department of Finance (DOF) Demographic Research Unit[3]; DOF estimates are based on the U.S. Census counts. This report uses DOF projections produced in 2014 for the 2015 San Francisco population; the population count is estimated to be 848,564 (Table 5)[3].

Racial and Ethnic Categorization

People were classified as one of the following: American Indian/Alaska Native, Asian/Pacific Islander, African American (Black), Hispanic, or White. A person with Hispanic ethnicity, regardless of race, was classified as Hispanic, while Non-Hispanics were categorized by their race designation. Occasionally, patients were classified as Other race. Because the category Other is not clearly defined and no reliable San Francisco population estimate exists for it, race-specific rates were not calculated for this population group. Only the frequency values for the race Other were included in the incidence tables.

In 2000, the United States Census Bureau began allowing multiple race designations for its decennial population census; therefore, the California DOF population estimates also include an additional race category, Multiple Race. Because CDCU only collects a single race designation, a bridging method established by the California DOF was used to reallocate the population in the Multiple Race category to single race categories[4]. This method provided reproducible denominators for calculating race-stratified incidence rates.

Demographic Data

Depending on the disease, demographic information was usually ascertained through patient interviews, medical chart abstraction or health care provider interviews. Because not all individual cases of disease are investigated by the local health department (e.g., campylobacteriosis), completeness varied by disease.

Age was calculated by subtracting the date of birth from the date of notification to SFDPH, then dividing the difference by 365.25 (the 0.25 accounts for leap years). Numerical values for age were also routinely collected and entered into the database. If either date used in the age formula was missing but a numerical age was recorded, then this age was used in analyses. The frequency of cases with missing or unknown sex or race/ethnicity information is included in the tables.

Notifiable Disease Definitions

The diseases required to be reported to public health and disease definitions can change over time. Changes in disease definitions can impact the numbers of cases of disease reported to the SFDPH.

Please see this report's appendices for a list of notifiable disease definition changes from 2004 to 2015 and definitions for select notifiable diseases. Changes in notifiable disease definitions from 1986 to 2003 are documented in The San Francisco Communicable Disease Report 1986-2003 (May 2005), accessible at: https://www.sfcdcp.org/about/publications-data-and-reports/.

Statistical Calculations

SAS version 9.3 (SAS Institute Inc., Cary, NC) was used to calculate crude incidence rates, age-specific rates, three-year moving averages and confidence intervals. For this report, the crude incidence rate (IR) is defined as the number of new cases of disease per 100,000 residents at risk during a given year. The denominator for all diseases, except infant botulism, congenital rubella, influenza deaths for people aged 0-64 years, and invasive *H. influenzae,* was the total San Francisco population. The population at risk for infant botulism and congenital rubella was San Francisco residents less than one year of age, while for the invasive *H. influenzae* rate and influenza death rate for persons aged 0-64 years, it was persons less than 15

years of age and persons 0-64 years of age, respectively. Age-adjusted rates were not calculated. Rates and proportions were generally rounded to one decimal place.

Formula 1.

$$IR = \left(n \big/ p \right) \times 100{,}000$$

where *n*= Number of Cases and *p*=Population at Risk, and each is identified for a one-year period.

Example: In 2015, there were 156 female cases of campylobacteriosis in San Francisco. The estimated number of female residents in 2015 was 418,564. Accordingly, the incidence among females was:

$$IR_{Campy\,2015_{Females}} = \left(156 \big/ 418{,}564 \right) \times 100{,}000 = 37.3$$

cases per 100,000 population.

Reliability of Rates

With rare diseases or with diseases where the number of cases for a particular population group is very small, a minor change in the number of incident cases can result in a relatively large shift in the corresponding rate. Rates and percentages based on a small number of events may be unreliable and are generally subject to substantial variability over time. Unstable rates should not be statistically compared for differences with the rates for other populations or for San Francisco over time. Rates with a relative standard error (RSE) of 23% or greater were considered unstable and identified by an asterisk in tables of this report[5]. Equivalently, numerators less than 20 result in unreliable rates.

Formula 2.

$$RSE = \left(SE_{rate} \big/ r \right) \times 100 = \left(\frac{r \big/ \sqrt{n}}{r} \right) \times 100 = \left(\sqrt{1 \big/ n} \right) \times 100$$

where *r* = Rate and SE_{rate} = Standard Error of a Rate and *n* = Number of Cases

Example: In 2015, there were 514 cases of campylobacteriosis cases reported in San Francisco and one case of acute typhoid fever. Accordingly, the relative standard errors for campylobacteriosis and acute typhoid fever are:

$$RSE_{Campy\,2015} = \left(\sqrt{1 \big/ 514} \right) \times 100 = 4.4\ \%$$

The rate derived from the frequency of campylobacteriosis is considered stable (RSE < 23%).

$$RSE_{TyphoidFever\,2015} = \left(\sqrt{1 \big/ 1} \right) \times 100 = 100\%$$

The rate derived from the frequency of acute typhoid fever is not stable and is considered unreliable (RSE > 23%).

Exact Confidence Intervals

95% Exact Confidence Intervals (95% CI) for incidence rates were approximated from the gamma distribution, using the GAMINV function in SAS to calculate the Poisson confidence limits [6]. Confidence limits were rounded to one decimal place.

The confidence interval provides a useful means for evaluating the precision of a rate calculation. A rate estimate with a wide confidence interval is less precise than a rate with a narrow confidence interval. Using 2015 giardiasis cases as an example, consider the difference between incidence among residents less than 1 year of age (rate=11.1, 95% CI=0.3-62.0) and those aged 35-44 years (rate=30.7, 95% CI=22.5-41.0). The range of possible values among the older age group is less than the range for children less than 1 year of age. The rate among residents 35-44 years is therefore considered more precise. Rates with very large confidence intervals should be interpreted cautiously. In this report, confidence intervals were not displayed for individual cell counts with zero cases.

Aggregate Rates: Three-year moving averages

As stated above, with rare diseases or where the number of cases for a particular population group is very small, a minor change in the number of incident cases can result in a relatively large shift in the rate. One approach to minimizing the effect of large rate shifts and allowing detection of overall trends involves the calculation of moving averages. This approach can be used to compare across populations or to compare across time when the two time periods do not overlap. Calculating three-year moving averages involved summing the numerator and denominator over a three year period and dividing by three.

Rules for Data Suppression

If the number of cases for a given time period is small and enough demographic information is given, it may be possible to identify an individual case-patient from tabulated data. Therefore, the total annual incidence was required to be at least 19 cases for information about age, sex, and race/ethnicity data to be included. Of those diseases with an annual incidence of 19 or more cases, six diseases were selected for age, sex, and race/ethnicity stratification for this report. These diseases were selected due to their public health importance and/or volume of reports.

Data Limitations

The surveillance data was reported by laboratorians, clinicians and other mandated reporters to the local health authority in compliance with public health laws[1]. Reports may be incomplete and/or important demographic, clinical or risk information may not be available upon active follow-up. Because not all cases of disease were detected by the health care system and not all detected cases were reported to the public health department, the information presented in this report may underestimate the true incidence of disease.

Note to Users of this Report

Occasionally, users of this report would like to see incidence rates for specific population parameters (e.g., rate of salmonellosis in children <5 years of age in 2015). Simple calculations can be accomplished by inserting the desired incidence data provided in the tables of this report and the San Francisco population estimates from TABLE 5 into *Formula 1* above. When such calculations are used for grants or technical papers, the citation of this report must explicitly indicate that SFDPH did not perform the calculation.

Example: A grant writer wishes to know the rate of salmonellosis in San Francisco residents younger than 5 years of age in 2015. From TABLE 2, it is known that 11 cases were <1 year of age and 27 cases were 1-4 years of age. Similarly, the number of San Francisco residents in 2015 can be found in TABLE 5:

	Female	*Male*
<1 yr	4,407	4,580
1-4 yrs	16,770	17,429

Thus, the total number of cases <5 years of age = $(11 + 27) = 38$ and

the total population <5 years of age = $(4{,}407 + 16{,}770 + 4{,}580 + 17{,}429) = 43{,}186$ and

the rate of salmonellosis is 88.0 cases per 100,000 population

$$= \left({}^{38}\!\!\diagup\!\!_{43{,}186} \right) \times 100{,}000 = 88.0$$

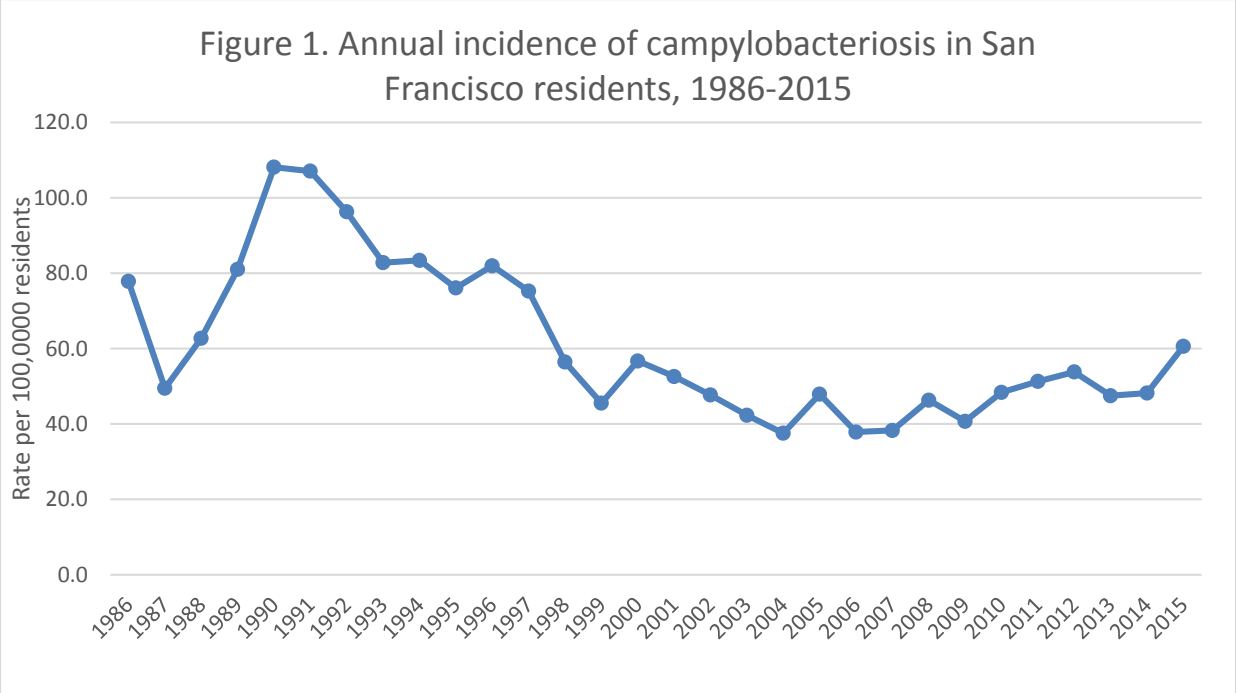
Notes on 2015 Surveillance Data

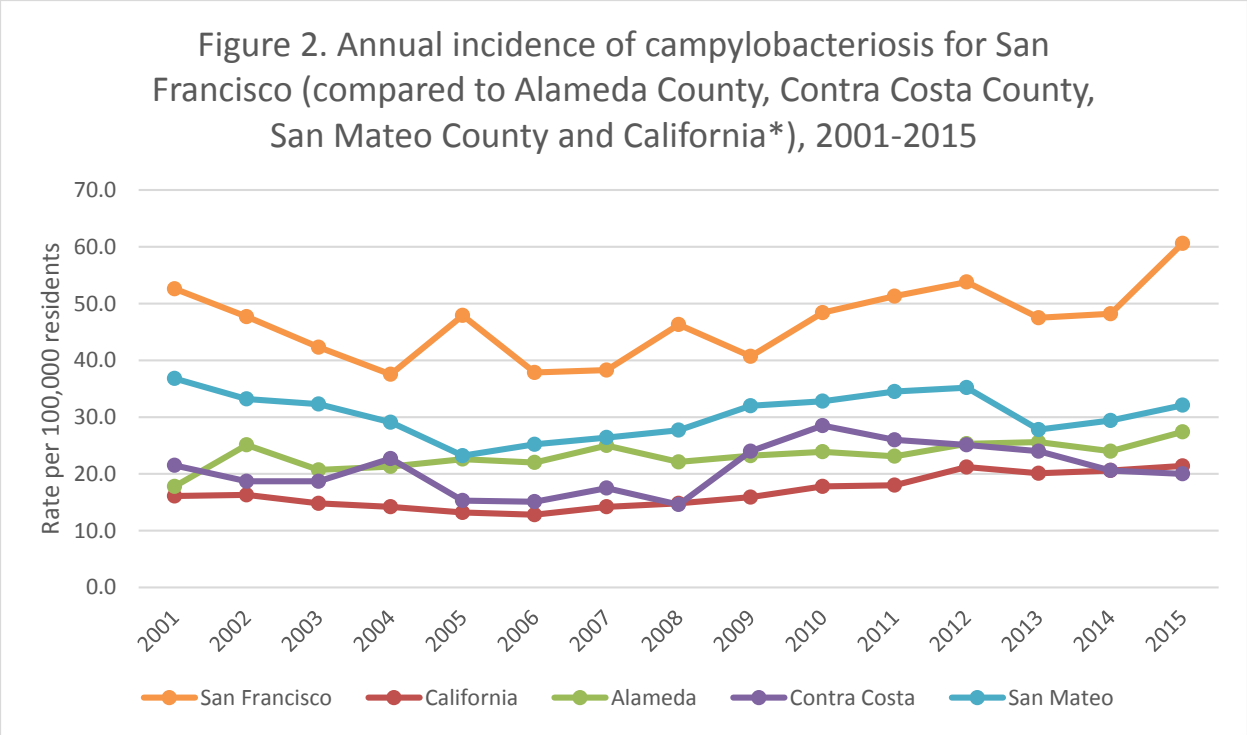
The following notes are intended to aid in the interpretation of reported cases of selected diseases.

CAMPYLOBACTERIOSIS

Campylobacter infections remained the most frequently reported enteric disease in San Francisco (n=514, rate=60.6 per 100,000 residents, 95% CI: 55.4-66.0), significantly higher than in 2014 (n=405, rate=48.2 per 100,000 residents, 95% CI: 43.6-53.1). This increase could possibly be due to the increasing use of Culture Independent Diagnostic Tests (CIDTs) and increased testing of patients presenting with diarrhea or gastroenteritis, as well as a true increase in cases. In 2015, the national surveillance case definition for *Campylobacter* infection changed; laboratory criteria for probable cases included the detection of *Campylobacter* spp. in a clinical specimen using a culture independent diagnostic test (CIDT). Before 2015, cases with only results from CIDT were classified as suspect. In SFDPH's 2014 Annual Report of Communicable Diseases, suspect cases of campylobacteriosis (55 of the 405 cases reported) were included in the case count for the first time; in previous Annual Reports, only confirmed and probable cases were included. Because suspect cases were included in the 2014 report, the 2015 change in case definition does not explain the year-over-year increase. During 2015, one laboratory increased the use of CIDTs, reporting more than double the number of laboratory reports for campylobacteriosis as in previous years. See the Culture Independent Diagnostic Tests and Surveillance Case Definitions of this report for more information.

Historically, rates of campylobacteriosis declined from 1990 (n=782, rate=108.1 per 100,000 residents, 95% CI: 100.7-116.0) until 2004 (n=297, rate=37.5 per 100,000 residents, 95% CI: 33.4-42.1). Since 2004, rates have been increasing, with some year to year fluctuations (See Figure 1). Rates of campylobacteriosis in San Francisco are higher than in other Bay Area counties for all available years of data (see Figure 2).





*Rates for California, Alameda County, Contra Costa County, and San Mateo County from California Department of Public Health Report, *Yearly Summary Reports of Selected General Communicable Diseases in California*[7,8].

CHIKUNGUNYA

Chikungunya, caused by the chikungunya virus, has similar symptoms to dengue fever (fever, rash, and joint pain) and is transmitted by *Aedes aegypti* and *Aedes albopictus* mosquitoes. The disease was first recognized in humans in the 1950s in Africa, and was subsequently detected in both Africa and Asia. In 2007, chikungunya spread to Europe – the first indication chikungunya could spread to novel locations. In 2013, the first local transmission was identified in the Americas, and it quickly became widespread, with hundreds of thousands of cases reported in Latin America in 2015. Chikungunya became a nationally notifiable disease in the US in 2015; in 2014, chikungunya became reportable in California under the category of "Occurrence of any unusual disease." Eight probable and confirmed cases of chikungunya were reported in San Francisco in 2015. All eight cases reported travel to Asia and/or Central or South America.

CRYPTOSPORIDIOSIS

In 2015, 48 cases of cryptosporidiosis (rate=5.7 per 100,000 residents; 95% CI: 4.2-7.5) were reported in San Francisco, a significant increase from 2014 (N=16; rate=1.9 per 100,000 residents; 95% CI: 1.1-3.1)[A]. Thirty-four (71%) cases were male, 24 (50%) were white, 25 (52%) were marginally housed or homeless, and 28 (58%) were immune suppressed; the average age of a case was 43 years old. After investigation, the Cryptosporidiosis Surveillance Project found no drinking water-associated cryptosporidiosis outbreaks or any other common exposures.

Known risk factors for acquiring cryptosporidiosis infection include contact with animals, day care attendance or work, health care work, travel to developing countries, consumption of untreated water, sexual contact with another case, and having a compromised immune system.

CULTURE-INDEPENDENT DIAGNOSTIC TESTS AND SURVEILLANCE CASE DEFINITIONS

Culture-independent diagnostic tests (CIDTs) are diagnostic laboratory tests that do not require the culture or isolation of a microorganism to detect or characterize a pathogen. Examples of CIDTs include polymerase chain reaction (PCR) testing, enzyme immunoassay (EIA) testing, nucleic acid amplification testing (NAAT), etc. Laboratories are rapidly adopting use of CIDTs because they are faster and more automated than traditional culture-based testing methods, multiple pathogens can be identified with one test, syndromic diseases (e.g., respiratory or enteric) can be assessed by multiplex molecular panels, less technical training is required to perform tests, and costs are potentially lower. Unfortunately, CIDTs also have significant disadvantages, if culture or isolation is not done concurrently. Without a culture or isolate, subtyping and genotyping cannot be performed, antimicrobial resistance cannot be determined, and detecting and monitoring trends, clusters and outbreaks is more difficult.

It's unclear how the use of CIDTs has affected healthcare provider or laboratory testing practices and thus surveillance data and their interpretation[9]. Possible effects may include the following:

1. Less expensive, faster testing in a more clinically relevant timeframe may lead to an increase in tests ordered by healthcare providers, meaning more disease is detected.
2. Multiple pathogens tested with one test may mean more co-infections are detected.
3. CIDT syndromic panels may increase detection of certain pathogens since the panels may include pathogens not found in routine culture procedures.
4. Without an isolate or culture, reflex testing, subtyping, genotyping and antimicrobial testing cannot be performed, which makes detecting and monitoring trends more difficult.

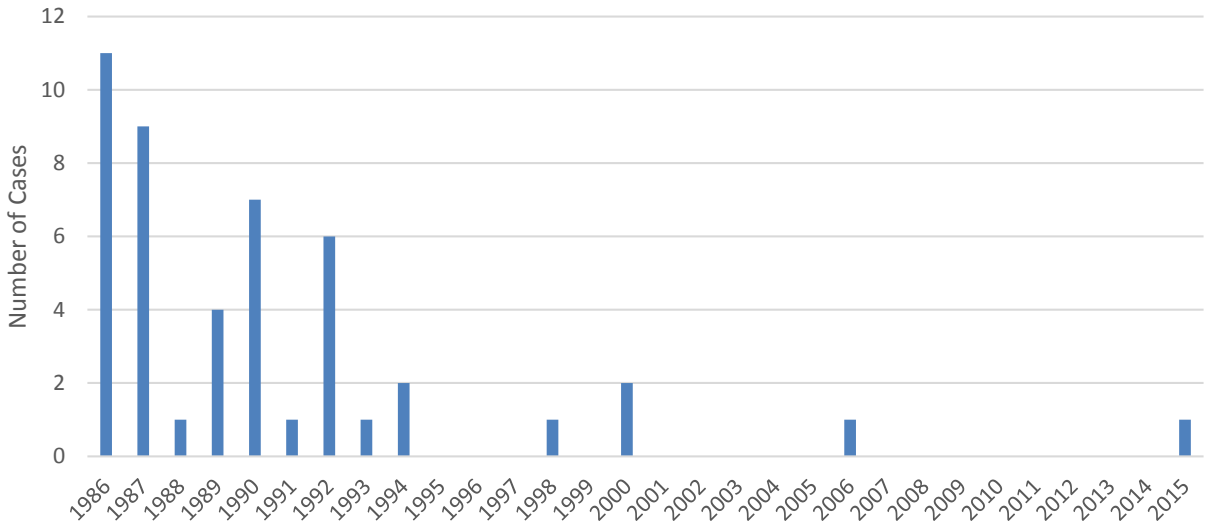
A case definition is a set of uniform criteria used to define a disease for public health surveillance. Before 2012, the national surveillance disease case definitions for campylobacteriosis, salmonellosis, and shigellosis did not include criteria for CIDTs. In 2012, the laboratory criteria for the national disease case definitions for campylobacteriosis, salmonellosis, and shigellosis were updated to include CIDTs; those cases of disease diagnosed by CIDT without culture confirmation were classified as suspect. In 2015, the case definition for campylobacteriosis was revised to categorize cases of disease diagnosed by only CIDT as probable.

[A] Because San Francisco experienced a large outbreak of shigellosis in late 2014 and early 2015, it is likely that increased testing was ordered by community providers for the purposes of case finding during this time. This increase in testing likely led to an increase in detection of infections such as cryptosporidiosis.

HANSEN'S DISEASE (LEPROSY)

Hansen's disease (leprosy), caused by the slow growing bacteria *Mycobacterium leprae*, affects the peripheral nerves, skin, eyes, and lining of the nose; signs and symptoms include skin lesions and loss of sensation. Left untreated, corneal ulcers, blindness, paralysis of the hands and feet, loss of eyebrows, and saddle-nose deformity can occur. Leprosy is not highly transmissible and is treatable. In the US, leprosy is rare; according to the National Hansen's Disease Program[B], there are currently 6,500 cases in the US. A total of 47 cases have been reported in San Francisco since 1986. Females and males were affected equally (24 females and 23 males); the average age of cases at time of report was 45 years of age; the youngest case was 15 years of age, and the oldest was 82 years of age. Thirty-eight cases (81%) were Asian/Pacific Islanders, and 6 cases (13%) were Hispanics. In 2015, one case of Hansen's disease was reported in San Francisco.

Figure 3. Number of Hansen's Disease (Leprosy) Cases by Year of Report, San Francisco, 1986-2015



HEPATITIS A

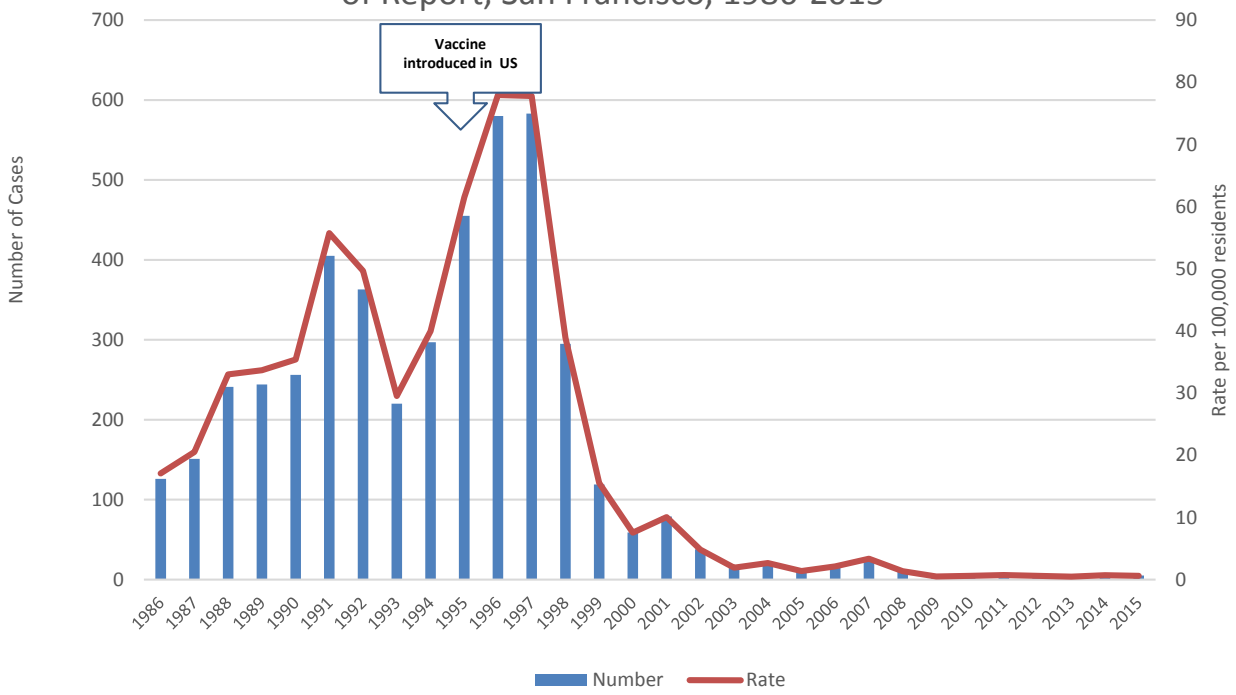
Hepatitis A is characterized by abrupt onset of fever, malaise, anorexia, nausea, abdominal discomfort, dark urine and jaundice. The illness is caused by the hepatitis A virus. This virus is transmitted through the fecal-oral route by person to person contact or ingestion of contaminated food or water. Before the introduction of the hepatitis A vaccine, prevention efforts focused on hygiene measures. Hepatitis A vaccines, which provide long term protection, were licensed in 1995 and 1996. In 1996, CDC's Advisory Committee on Immunization Practices (ACIP) recommended vaccination of people at increased risk for disease, including international travelers, men who have sex with men (MSM), injection and non-injection drug users, and children living in communities with high rates of disease. In 2006 the recommendation was expanded to all children.

[B] https://www.hrsa.gov/hansens-disease/index.html

During the years prior to the introduction of the hepatitis A vaccine, community epidemics occurred cyclically in the United States. Nationally, in the pre-vaccine era, children 2-18 years of age had the highest rates of hepatitis A (15-20 cases per 100,000 population in the early to mid-1990s); however, in San Francisco the highest rates of hepatitis A during this period were among people 25-34 years of age. This pattern may have been due to the spread of hepatitis A among MSM.

Since the introduction of the vaccine, rates of hepatitis A in San Francisco have decreased from a high in 1996 of 77.9 per 100,000 resident to less than 1 per 100,000 residents. In San Francisco, since 2009, an average of 5 cases of hepatitis A per year have been reported.

Figure 4. Incident Rate and Number of Hepatitis A Cases by Year of Report, San Francisco, 1986-2015



HEPATITIS B

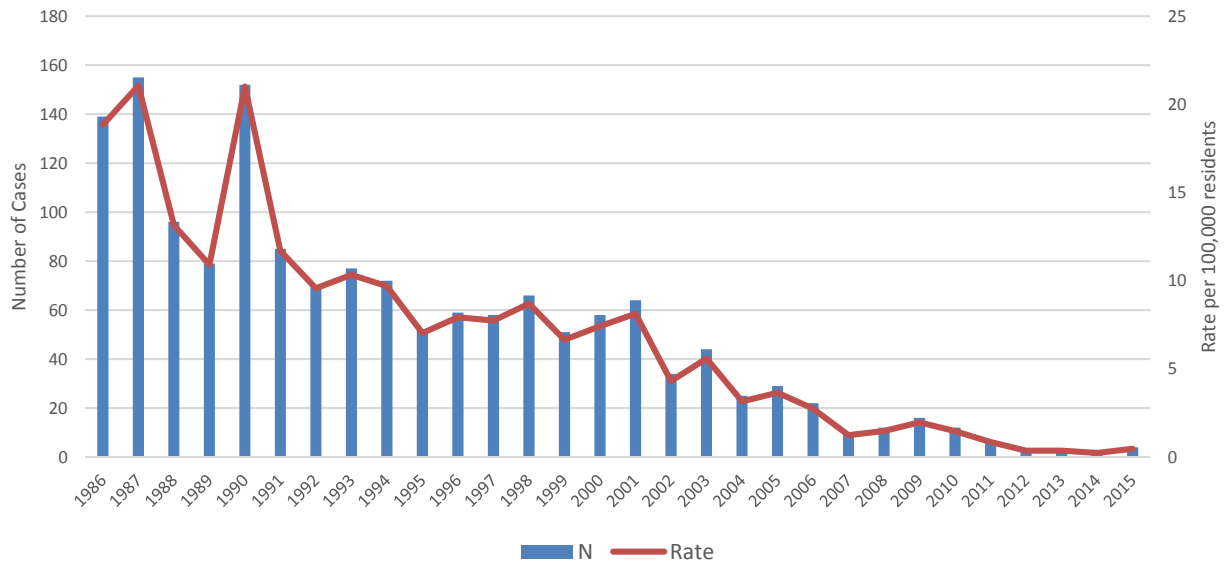
Hepatitis B is a liver disease caused by the hepatitis B virus. Acute hepatitis B infection may be asymptomatic or may cause symptoms such as jaundice, dark urine, fatigue, nausea, vomiting, and abdominal pain. Some people develop chronic hepatitis B infection, which can lead to cirrhosis of the liver or liver cancer. Hepatitis B is transmitted through contact with the blood or bodily fluids of an infected person (including sexual contact), sharing injection drug use equipment, from a mother to a newborn during childbirth, or through close personal contact within households.

Vaccines to prevent hepatitis B infection have been available in the US since 1981. In 1989, hepatitis B infection became a reportable disease under Title 17 of the California Code of Regulations. Early

vaccine recommendations focused on certain high risk groups, but this limited vaccination strategy failed to prevent the transmission of hepatitis B. In 1991, ACIP recommended a comprehensive vaccination strategy which included universal vaccination of infants beginning at birth and catch-up vaccination of older children, adolescents, and other selected high risk populations. In California, the California Health and Safety Code prenatal hepatitis B screening law, requiring all pregnant women be screened for hepatitis B, became effective in 1991, and the California Perinatal Hepatitis B Prevention Program was established in the same year. In California, a state law requiring hepatitis B vaccination for daycare, elementary school, and middle school entrance went into effect in 1999.

In San Francisco, the rate of acute hepatitis B has decreased from a high of 21.1 per 100,000 residents in 1987 to 0.5 per 100,000 in 2015. Since 2011, in San Francisco, the annual rate of acute hepatitis B has been less than 1 per 100,000 residents.

Figure 5. Incident Rate and Number of Acute Hepatitis B Cases by Year of Report, San Francisco, 1986-2015



MEASLES

No cases of measles were reported in San Francisco in 2015; however, a multijurisdictional outbreak of measles occurred, associated with Disneyland and California Adventure Park located in Orange County, California. A total of 147 measles cases with rash occurring between December 28, 2014-April 17, 2015 from seven states, Mexico and Canada were identified[10]. No source was identified. The San Francisco Department of Public Health followed up with over 120 suspected measles cases and persons potentially exposed to measles in January and February of 2015.

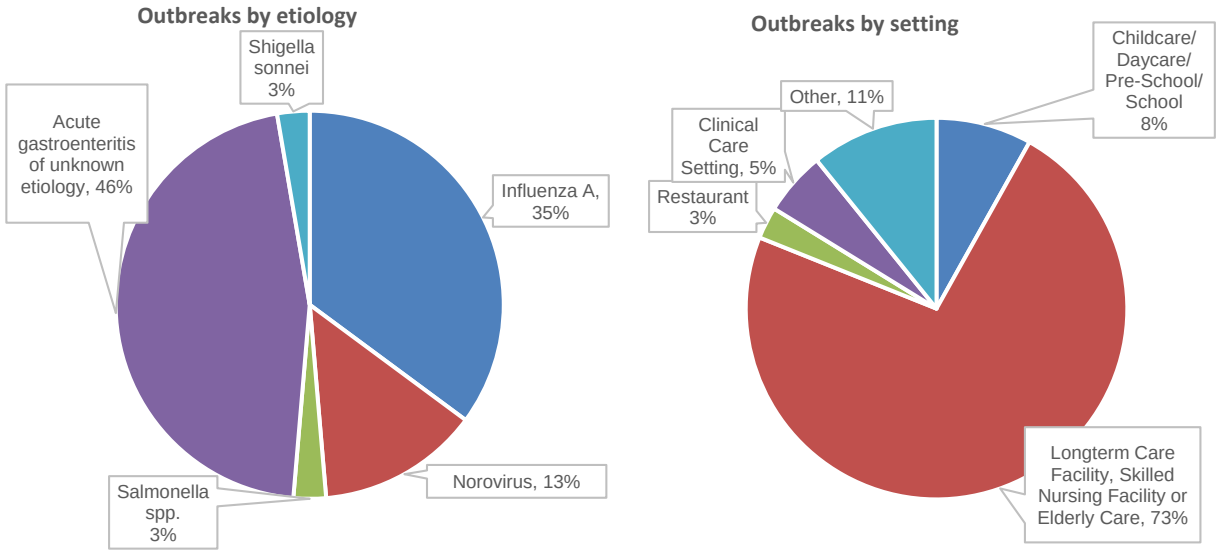
OUTBREAKS

In 2015, CDCU identified and investigated a total of 37 communicable disease outbreaks

- Etiology: Twenty-four (65%) outbreaks involved gastrointestinal illness and 13 (35%) involved respiratory illness.
    - Gastrointestinal outbreaks: One (3%) of the 37 outbreaks was caused by *Shigella sonnei* (a sub-outbreak within the city-wide outbreak that occurred in 2014-2015; lab-confirmed), one (3%) was caused by salmonellosis, and five (13%) were caused by norovirus (one lab-confirmed, four suspected).
    - Respiratory outbreaks: Thirteen (35%) of the 37 outbreaks were caused by influenza A (all lab-confirmed).

- Setting: Twenty-seven (73%) of the 37 outbreaks were associated with a long-term care facility, a skilled nursing facility, or elderly care; three (8%) were associated with childcare, daycare, preschool or schools; one (3%) was associated with a restaurant; two (5%) were associated with a health care setting, and four (11%) were associated with other types of settings.

Figure 6. Percent of reported outbreaks by etiology and setting, 2015, San Francisco

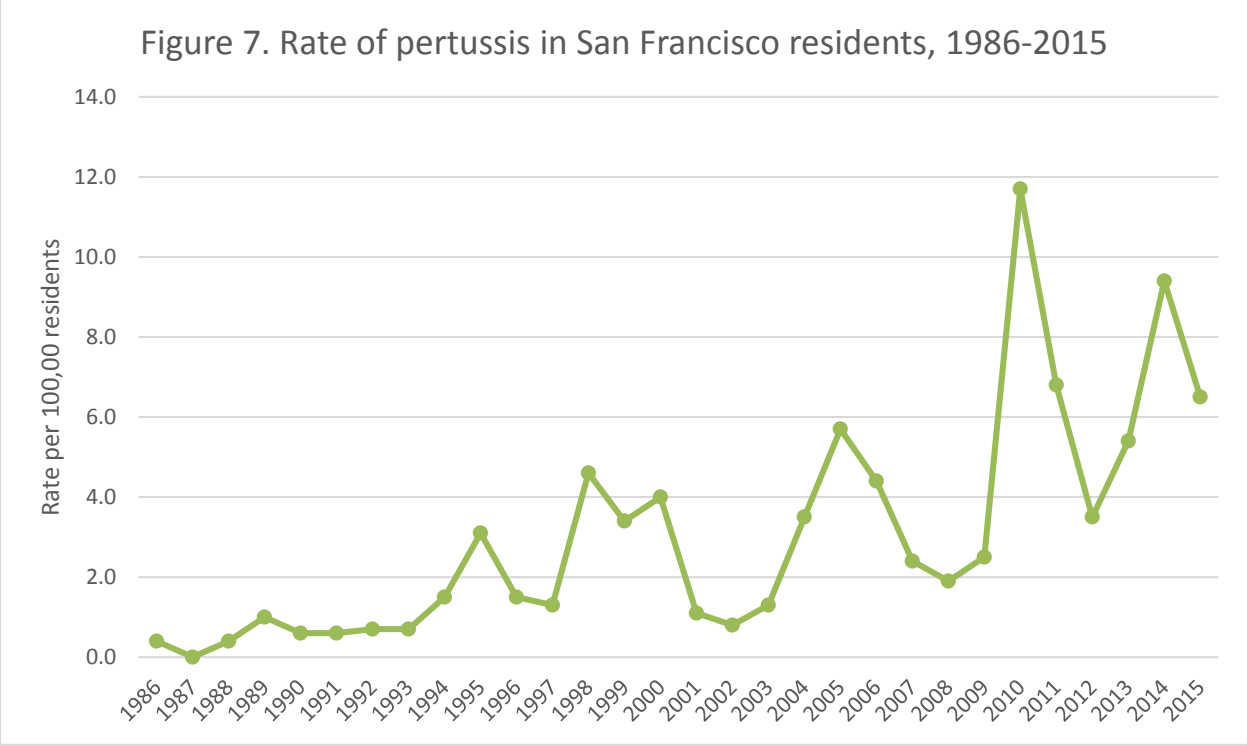


PERTUSSIS

Pertussis is endemic in the U.S. with epidemic cycles every three to five years. In 2010 and 2014, there were cyclic increases in cases in California, and San Francisco followed the same pattern of cyclic increases (See Figure 7). The incidence of pertussis in 2015 (6.5 cases per 100,000 residents, 95% CI: 4.9-8.4) was lower than in 2014 (9.4 cases per 100,000 residents, 95% CI: 7.4-11.7), but this difference was not statistically significant. In 2015, 55 cases were reported among San Francisco residents; no deaths occurred.

Rates of pertussis have been increasing in the last 30-40 years. Reasons for this increase are unknown, but potential contributors include increased recognition and diagnosis, increased access to laboratory testing, introduction of new, more sensitive nucleic acid amplification tests, and increased surveillance and reporting. The increase may also be due to a true increase in incidence, possibly due to less durable immunity following vaccination with the acellular pertussis vaccine that was introduced in place of whole-cell pertussis vaccine in the 1990s. [11]

People of all ages can get pertussis, though death and serious complications are most likely in young infants. In October 2012, the ACIP recommended maternal pertussis immunization during every pregnancy to help prevent morbidity and mortality in infants[12]. In 2014, the surveillance case definition for pertussis was changed to better capture the burden of disease in infants who do not meet the traditional clinical criteria for pertussis.



RABIES

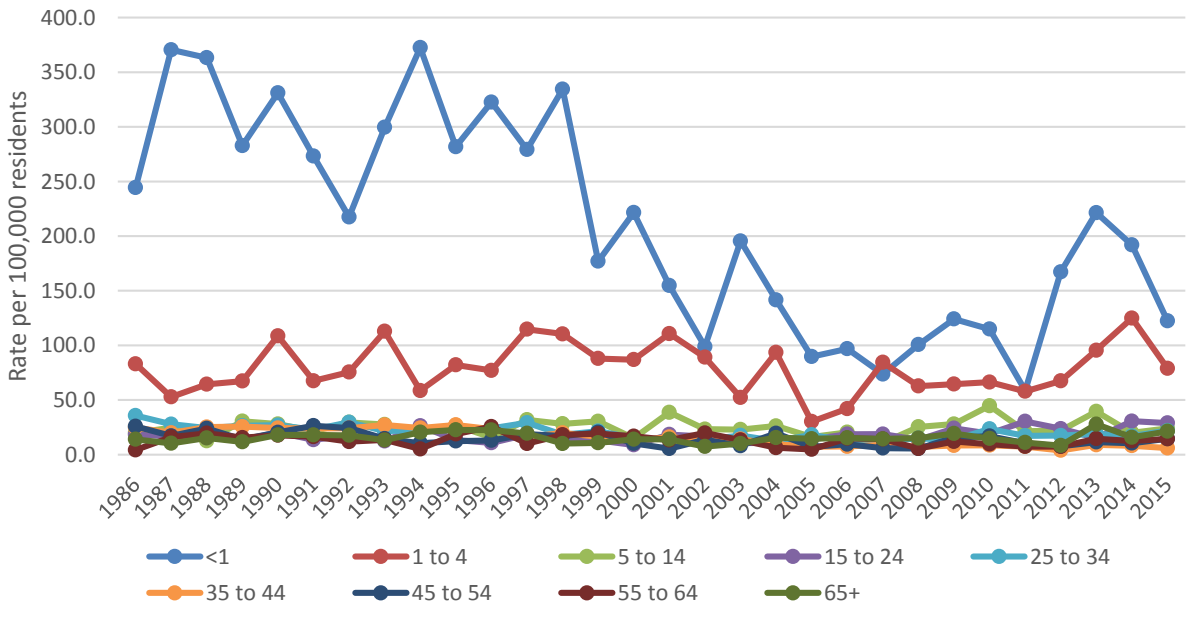
Three rabid bats were detected in San Francisco in 2015. Bats present a risk of rabies exposure to humans and pets, especially when they are handled or enter homes where they can have contact with people or their pets[13]. Rabies was not detected in any animals aside from bats in 2015, and no cases of rabies have been reported in animals other than bats (e.g. dogs, cats, skunks, raccoons, foxes, coyotes) in San Francisco for over 70 years. The last human rabies case in San Francisco occurred in 1987, and the presumed source was a dog bite that occurred while the patient was in the Philippines.

SALMONELLOSIS

In 2015, 183 cases in San Francisco residents were reported (21.6 cases per 100,000 residents, 95% CI: 18.6-24.9); the rate is comparable to 2013 and 2014 rates (23.4 cases per 100,000 residents, 95% CI: 20.2-26.9 in 2013 and 21.4 cases per 100,000 residents, 95% CI: 18.4-24.8 in 2014). In 2015, 26 of the 183 cases (14%) were suspect cases (in 2014, 7 of the 180 cases (3.9%) reported in Table 1 were suspect); all 26 suspect salmonella cases were diagnosed by CIDT alone. Only confirmed and probable cases were included in reports prior to 2014.

Rates of salmonellosis in 2015 were highest among those under age one year (N=11, 122.4 per 100,000 residents, 95% CI: 61.1-219.0) and among 1-4 year olds (N=27, 79.0 per 100,000 residents, 95% CI: 52.0-114.9), which is consistent with findings from previous years (see Figure 8).

Figure 8. Annual incidence of non-typhoidal salmonellosis by age group in San Francisco, 1986-2015



The most frequently reported *Salmonella* serotypes in 2015, which together accounted for 55.2% of the 183 cases with serotype information (37 cases had no serotype information) were as follows:

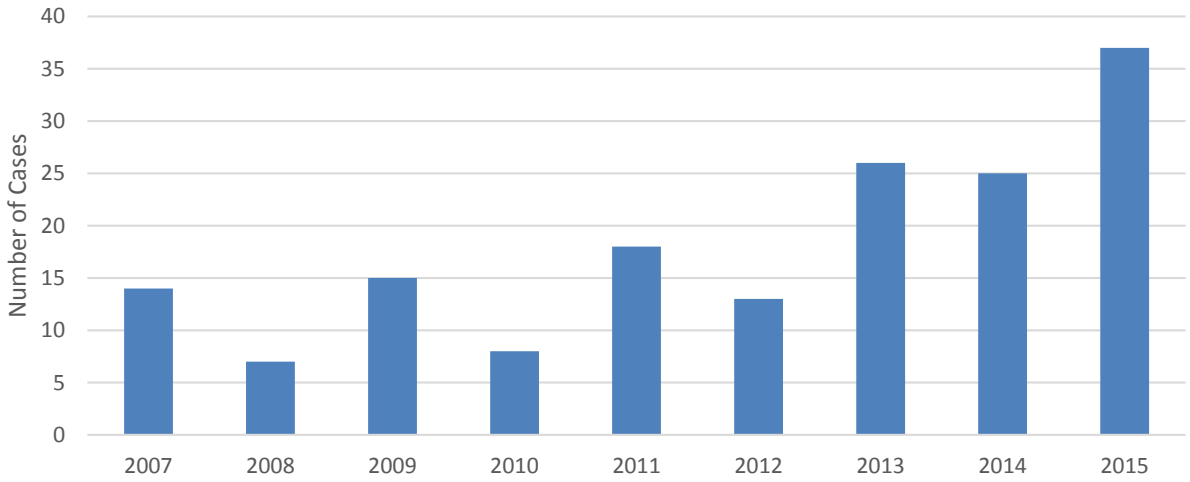
- *S.* Infantis (N=20, 10.9%)
- *S.* Enteriditis (N=18, 9.8%)
- *S.* I 4,5,12:i:- (N=12, 6.6%)
- *S.* Typhimurium (N=12, 6.6%)
- *S.* Adelaide (N=10, 5.5%)
- *S.* Muenchen (N=9, 4.9%)
- *S.* Newport (N=8, 4.4%)
- *S.* Berta (N=6, 3.3%)
- *S.* Poona (N=6, 3.3%)

SHIGA TOXIN-PRODUCING *ESCHIRICHIA COLI* and HEMOLYTIC UREMIC SYNDROME

Public health surveillance and reporting requirements for *Escherichia coli* have changed over time as laboratory testing methods and understanding of pathogenesis have evolved. *E. coli* O157:H7 is one of many Shiga toxin-producing *E. coli* serotypes that cause clinically and epidemiologically significant disease, including Hemolytic Uremic Syndrome (HUS). Until 2006, only *E. coli* O157:H7 and/or HUS were reportable. Since October 2006, Shiga toxin-producing *E. coli* (STEC), which encompasses *E. coli* O157:H7 and other serotypes, and Shiga toxin in feces have been reportable.

In 2015, 37 STEC cases (4.4 cases per 100,000 residents), two Shiga toxin in feces cases and one case of HUS were reported. The increase in STEC cases is consistent with statewide trends[8]. The increase is hypothesized to be due to increased detection of non-O157 Shiga toxin-producing *E. coli*, increased use of Shiga toxin testing by clinical laboratories, and an increased number of specimens forwarded to a public health laboratory for culture and identification[14]. Beginning in 2014, clinical laboratories were required to submit Shiga toxin-positive fecal broths and Shiga toxin-producing *Escherichia coli* (STEC) O157 and non-O157 isolates to the local public health laboratory or the State Public Health Laboratory.

Figure 9. Number of Shiga toxin producing *Esherichia coli* (STEC) cases in San Francisco residents, by year of report, 2007-2015



SHIGELLOSIS

Of the 315 shigellosis cases reported in 2015, 58 were classified as suspect; all 58 suspect cases were diagnosed by CIDT. Prior to 2014, only confirmed and probable cases were included in SFDPH's annual case count. In 2014, five suspect cases were included in the case count, all diagnosed by CIDT.

The rates of shigellosis in San Francisco are higher compared to other California jurisdictions[7, 8] and have been increasing since 2008, with a significant increase from 2013 (14.3 cases per 100,000 residents) to 2015 (37.1 cases per 100,000 residents). The ongoing high incidence of shigellosis in San Francisco is partly attributable to sexual transmission among MSM[15]. The increase in 2014 and 2015 is attributed to several outbreaks, including a citywide outbreak described in more detail below.

From November 1, 2014 to April 30, 2015, San Francisco experienced a city-wide outbreak of ciprofloxacin-resistant shigellosis that disproportionately affected homeless and marginally-housed individuals. The outbreak was later linked to a nationwide cluster of ciprofloxacin-resistant *Shigella*. The nationwide cluster was identified based on a finding of closely related Pulsed-Field Gel Electrophoresis (PFGE) patterns in *Shigella* isolates[16].

A total of 248 cases of *S. sonnei* or untyped *Shigella* with ciprofloxacin-resistance or unknown antimicrobial susceptibility were reported with specimen collection dates from November 2014 to April 2015. Only individuals with residence in or travel to San Francisco during the exposure period and no recent international travel were included as part of the outbreak. The average age of patients was 44.5 years, with a range of one year to 88 years. One hundred sixty-nine (68%) were male, and 123 (50%) were white. Eighty-three patients (34%) were hospitalized. Sixty-eight cases (27%) were homeless and 31 cases (13%) resided in single room occupancy (SRO) hotels. Although homeless and marginally-housed individuals were not the majority of cases, they were disproportionately impacted by the outbreak.

Investigation and control activities in response to the outbreak included dissemination of a health advisory and press release, interviewing and providing health education to cases, and distribution of educational materials and hand sanitizer towelettes to agencies and organizations that serve the homeless. SFDPH's Environmental Health also conducted inspections and recommended prevention and control measures to SRO hotels and communal food facilities for the homeless. Despite extensive investigation, no point source or common exposure such as shelters, soup kitchens, or restaurants was identified.

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TABLE 1: FREQUENCY OF REPORTABLE DISEASES IN SAN FRANCISCO, 2015

Disease	N	Rate
Amebiasis	57	6.7
Anaplasmosis/Ehrlichiosis	1	0.1 *
Anthrax	0	0.0
Babesiosis	0	0.0
Botulism, Foodborne	0	0.0
Botulism, Infant (1)	0	0.0
Botulism, Unspecified	0	0.0
Botulism, Wound	0	0.0
Brucellosis	0	0.0
Campylobacteriosis	514	60.6
Chickenpox, Severe (Death or Hosp)	0	0.0
Chikungunya	8	0.9 *
Cholera	0	0.0
Ciguatera Fish Poisoning	1	0.1 *
Coccidioidomycosis	12	1.4 *
Creutzfeldt-Jakob Dis. or Other TSE (3)	0	0.0
Cryptosporidiosis	48	5.7
Cysticercosis or Taeniasis	2	0.2 *
Dengue	4	0.5 *
Diphtheria	0	0.0
Domoic Acid Poisoning	0	0.0
Encephalitis, Arboviral	0	0.0
Encephalitis, Bacterial	0	0.0
Encephalitis, Fungal	0	0.0
Encephalitis, Other Viral	0	0.0
Encephalitis, Parasitic	0	0.0
Encephalitis, Unspecified	0	0.0
Encephalitis, Total	0	0.0
Giardiasis	199	23.5
Haemophilus influenzae, Invasive (4)	0	0.0
Hantavirus Infection	0	0.0
Hemolytic Uremic Syndrome (5)	1	0.1 *
Hepatitis A	5	0.6 *
Hepatitis B, Acute (6)	4	0.5 *
Hepatitis C, Acute	1	0.1 *
Hepatitis Delta	0	0.0
Hepatitis E	3	0.4 *
Influenza, Deaths, 0-64 years of age	1	0.1 *
Legionellosis	4	0.5 *
Leprosy	1	0.1 *
Leptospirosis	1	0.1 *
Listeriosis	8	0.9 *
Lyme Disease	1	0.1 *
Malaria	5	0.6 *
Measles	0	0.0

Disease	N	Rate
Meningitis, Bacterial	4	0.5 *
Meningitis, Fungal	9	1.1 *
Meningitis, Parasitic	0	0.0
Meningitis, Unspecified	0	0.0
Meningitis, Viral	10	1.2 *
Meningitis, Total	23	2.7
Meningococcal Infection	5	0.6 *
Mumps	1	0.1 *
Outbreaks, Foodborne	1	
Outbreaks, Non-Foodborne	36	
Paralytic Shellfish Poisoning	0	0.0
Pertussis	55	6.5
Plague	0	0.0
Poliovirus Infection	0	0.0
Psittacosis	0	0.0
Q Fever	0	0.0
Rabies, Animal	3	N/A
Rabies, Human	0	0.0
Relapsing Fever	0	0.0
Rickettsial Diseases (not RMSF or Typhus)	0	0.0
Rocky Mountain Spotted Fever	0	0.0
Rubella	0	0.0
Rubella, Congenital	0	0.0
STEC including *E. coli* O157	37	4.4
Salmonellosis (2)	183	21.6
Scombroid Fish Poisoning	0	0.0
Shiga toxin feces	2	0.2 *
Shigellosis, Group B: *S. flexneri*	57	6.7
Shigellosis, Group D: *S. sonnei*	184	21.7
Shigellosis, Other Group (2)	74	8.7
Shigellosis, Total (2)	315	37.1
Smallpox	0	0.0
Streptococcal Infection	0	0.0
Tetanus	0	0.0
Trichinosis	0	0.0
Tularemia	0	0.0
Typhoid Carrier	0	0.0
Typhoid Fever, Acute	1	0.1 *
Typhus Fever	0	0.0
Vibriosis, Non-Cholera	24	2.8
Viral Hemorrhagic Fever	0	0.0
West Nile Asymptomatic blood donor	0	0.0
West Nile Disease	0	0.0
West Nile Infections, Total (7)	0	0.0
Yellow Fever	0	0.0
Yersiniosis	6	0.7 *

(1) Rate among residents age <1 yr. (2) Includes suspect cases (3) TSE = transmissible spongiform encephalopathies (e.g., vCJD, kuru). (4) Reportable in <15 yrs; rate for residents aged <15 yrs. (5) Includes HUS only and E. coli STEC cases with HUS (6) Includes perinatal cases. (7) Includes both West Nile Disease & asymptomatic infections

****=Unstable Rates (where n<20) should not be compared statistically. See report appendix for disease reporting changes and selected disease definitions.***

Source: SFDPH Communicable Disease Control Unit. Data shown by year cases were reported to SFDPH. Rates are cases per 100,000 population. Population estimates from the California Department of Finance.

TABLE 2: FREQUENCY AND UNADJUSTED RATES FOR SIX SELECTED DISEASES BY AGE, SAN FRANCISCO, 2015

Amebiasis						Campylobacteriosis					Giardiasis				
Year	Age	N	Rate	95%CI		Age	N	Rate	95% CI		Age	N	Rate	95%CI	
2015	0-24 yrs	0	0.0*			<1 yr	5	55.6*	18.1	129.8	<1 yr	1	11.1*	0.3	62.0
	25-34 yrs	11	6.5*	3.3	11.7	1-4 yrs	32	93.6	64.0	132.1	1-4 yrs	2	5.8*	0.7	21.1
	35-44 yrs	14	9.4*	5.1	15.7	5-14 yrs	28	44.9	29.8	64.9	5-14 yrs	4	6.4*	1.7	16.4
	45-54 yrs	18	15.4*	9.1	24.3	15-24 yrs	30	41.4	27.9	59.1	15-24 yrs	17	23.4*	13.7	37.5
	55-64 yrs	7	6.7*	2.7	13.9	25-34 yrs	143	84.9	71.5	100.0	25-34 yrs	48	28.5	21.0	37.8
	65+ yrs	7	5.3*	2.1	11.0	35-44 yrs	98	65.5	53.1	79.8	35-44 yrs	46	30.7	22.5	41.0
	Total	57	6.7	5.1	8.7	45-54 yrs	87	74.2	59.4	91.5	45-54 yrs	49	41.8	30.9	55.3
						55-64 yrs	53	51.0	38.2	66.7	55-64 yrs	24	23.1	14.8	34.4
						65+ yrs	37	28.2	19.9	38.9	65+ yrs	8	6.1*	2.6	12.0
						Total	514	60.6	55.4	66.0	Total	199	23.5	20.3	26.9

Pertussis						Salmonellosis				
Year	Age	N	Rate	95% CI		Age	N	Rate	95% CI	
2015	<1 yr	1	11.1*	0.3	62.0	<1 yr	11	122.4*	61.1	219.0
	1-4 yrs	12	35.1*	18.1	61.3	1-4 yrs	27	79.0	52.0	114.9
	5-14 yrs	14	22.5*	12.3	37.7	5-14 yrs	15	24.1*	13.5	39.7
	15-24 yrs	19	26.2*	15.8	40.9	15-24 yrs	21	29.0	17.9	44.3
	25-34 yrs	0	0.0*			25-34 yrs	37	22.0	15.5	30.3
	35-44 yrs	3	2.0*	0.4	5.9	35-44 yrs	9	6.0*	2.7	11.4
	45-54 yrs	2	1.7*	0.2	6.2	45-54 yrs	17	14.5*	8.4	23.2
	55-64 yrs	2	1.9*	0.2	7.0	55-64 yrs	15	14.4*	8.1	23.8
	65+ yrs	1	0.8*	0.0	4.2	65+ yrs	28	21.3	14.2	30.9
	Total	55	6.5	4.9	8.4	Total	183	21.6	18.6	24.9

Shigellosis (Total)						Shigellosis (flexneri)					Shigellosis (sonnei)				
Year	Age	N	Rate	95%CI		Age	N	Rate	95%CI		Age	N	Rate	95% CI	
2015	<1 yr	0	0.0*			<1 yr	0	0.0*			<1 yr	0	0.0*		
	1-4 yrs	15	43.9*	24.6	72.3	1-4 yrs	1	2.9*	0.1	16.3	1-4 yrs	11	32.2*	16.1	57.6
	5-14 yrs	11	17.6*	8.8	31.6	5-14 yrs	1	1.6*	0.0	8.9	5-14 yrs	8	12.8*	5.5	25.3
	15-24 yrs	13	17.9*	9.5	30.7	15-24 yrs	1	1.4*	0.0	7.7	15-24 yrs	12	16.5*	8.6	28.9
	25-34 yrs	52	30.9	23.0	40.5	25-34 yrs	12	7.1*	3.7	12.4	25-34 yrs	21	12.5	7.7	19.1
	35-44 yrs	55	36.7	27.7	47.8	35-44 yrs	8	5.3*	2.3	10.5	35-44 yrs	34	22.7	15.7	31.7
	45-54 yrs	90	76.8	61.7	94.4	45-54 yrs	26	22.2	14.5	32.5	45-54 yrs	44	37.5	27.3	50.4
	55-64 yrs	54	52.0	39.0	67.8	55-64 yrs	6	5.8*	2.1	12.6	55-64 yrs	40	38.5	27.5	52.4
	65+ yrs	24	18.3	11.7	27.2	65+ yrs	2	1.5*	0.2	5.5	65+ yrs	14	10.7*	5.8	17.9
	Total	315	37.1	33.1	41.5	Total	57	6.7	5.1	8.7	Total	184	21.7	18.7	25.1

**=Unstable Rate (n<20). Unstable rates should not be compared statistically. 95%CI=Confidence Intervals; 95% Exact Confidence Intervals not displayed for counts of zero.*
Cases with missing age are represented in total column counts only. Thus, the sum of individual age groups for these diseases does not match the total column count shown.

Source: SFDPH Communicable Disease Control Unit. Data shown by year cases reported to SFDPH. Rates are cases per 100,000 population. Population estimates obtained from the California Department of Finance. This report uses 2014 estimates.

TABLE 3: FREQUENCY AND UNADJUSTED RATES FOR SIX SELECTED DISEASES BY SEX, SAN FRANCISCO, 2015

	Amebiasis					Campylobacteriosis					Giardiasis				
Year	Sex	N	Rate	95% CI		Sex	N	Rate	95% CI		Sex	N	Rate	95% CI	
2015	Male	53	12.3	9.2	16.1	Male	355	82.6	74.2	91.6	Male	173	40.2	34.5	46.7
	Female	4	1.0*	0.3	2.4	Female	156	37.3	31.7	43.6	Female	26	6.2	4.1	9.1
	Unk	0				Unk	3				Unk	0			
	Total	57	6.7	5.1	8.7	Total	514	60.6	55.4	66.0	Total	199	23.5	20.3	26.9

	Pertussis					Salmonellosis				
Year	Sex	N	Rate	95% CI		Sex	N	Rate	95% CI	
2015	Male	22	5.1	3.2	7.7	Male	94	21.9	17.7	26.8
	Female	33	7.9	5.4	11.1	Female	88	21.0	16.9	25.9
	Unk	0				Unk	1			
	Total	55	6.5	4.9	8.4	Total	183	21.6	18.6	24.9

	Shigellosis (Total)					Shigellosis (flexneri)					Shigellosis (sonnei)				
Year	Sex	N	Rate	95% CI		Sex	N	Rate	95% CI		Sex	N	Rate	95% CI	
2015	Male	239	55.6	48.8	63.1	Male	54	12.6	9.4	16.4	Male	133	30.9	25.9	36.7
	Female	76	18.2	14.3	22.7	Female	3	0.7*	0.1	2.1	Female	51	12.2	9.1	16.0
	Unk	0				Unk	0				Unk	0			
	Total	315	37.1	33.1	41.5	Total	57	6.7	5.1	8.7	Total	184	21.7	18.7	25.1

Rates are cases per 100,000 population; Rates not calculated for the sex category Unknown; *=Unstable Rate (n<20); Unstable rates should not be compared statistically.
95%CI=Confidence Intervals; 95% Exact Confidence Intervals not displayed for counts of zero.

Source: SFDPH Communicable Disease Control Unit. Data shown by year cases reported to SFDPH. Population estimates obtained from the California Department of Finance. This report uses 2014 estimates.

TABLE 4: FREQUENCY AND UNADJUSTED RATES FOR FOUR SELECTED DISEASES BY RACE/ETHNICITY, SAN FRANCISCO, 2015

Year	Race/ Ethnicity	Amebiasis				Pertussis				Salmonellosis			
		N	Rate	95% CI		N	Rate	95% CI		N	Rate	95% CI	
2015	White	36	10.3	7.2	14.2	15	4.3*	2.4	7.0	53	15.1	11.3	19.8
	Black	0	0.0*			1	1.9*	0.0	10.7	5	9.6*	3.1	22.3
	Asian/PI	2	0.7*	0.1	2.4	6	2.0*	0.7	4.3	67	22.1	17.2	28.1
	Hispanic	11	8.2*	4.1	14.6	15	11.1*	6.2	18.4	27	20.0	13.2	29.2
	Other/Unk	8				18				31			
	Total	57	6.7	5.1	8.7	55	6.5	4.9	8.4	183	21.6	18.6	24.9

Year	Race/ Ethnicity	Shigellosis (Total)				Shigellosis (flexneri)				Shigellosis (sonnei)			
		N	Rate	95% CI		N	Rate	95% CI		N	Rate	95% CI	
2015	White	167	47.6	40.6	55.4	33	9.4	6.5	13.2	100	28.5	23.2	34.7
	Black	23	44.0	27.9	66.0	1	1.9*	0.0	10.7	21	40.2	24.9	61.4
	Asian/PI	9	3.0*	1.4	5.6	1	0.3*	0.0	1.8	5	1.7*	0.5	3.9
	Hispanic	50	37.1	27.5	48.9	14	10.4*	5.7	17.4	21	15.6	9.6	23.8
	Other/Unk	66				8				37			
	Total	315	37.1	33.1	41.5	57	6.7	5.1	8.7	184	21.7	18.7	25.1

Asian/PI = Asian or Pacific Islander; there were no cases of these select diseases among people identified as American Indian/Alaskan Native.

*Rates are cases per 100,000 population; Rates not calculated for the race/ethnicity categories Other & Unknown. *=Unstable Rate (n<20). Unstable rates should not be compared statistically.*

95%LCL=Exact Lower Confidence Limit, 95%UCL=Exact Upper Confidence Limit; 95% Exact Confidence Limits not displayed for counts of zero.

Source: SFDPH Communicable Disease Control Unit. Data shown by year cases reported to SFDPH. Population estimates obtained from the California Department of Finance. This report uses 2014 estimates.

TABLE 5: SAN FRANCISCO POPULATION ESTIMATES BY SEX, AGE AND RACE/ETHNICITY, 2015

Year	Sex	Age	White	Hispanic	Black	Asian/PI	Am Indian	Total
2015	FEMALE	<1 yr	1,729	851	279	1,452	96	4,407
		1-4 yrs	6,469	3,372	1,111	5,452	366	16,770
		5-14 yrs	9,049	7,727	2,583	10,709	631	30,699
		15-24 yrs	9,830	7,656	3,240	14,899	417	36,042
		25-34 yrs	40,254	12,222	3,820	27,801	816	84,913
		35-44 yrs	33,278	10,994	3,221	23,126	577	71,196
		45-54 yrs	19,812	7,425	3,274	21,898	401	52,810
		55-64 yrs	17,012	5,952	3,496	23,102	284	49,846
		65+ yrs	26,349	7,367	4,623	33,235	307	71,881
			163,782	***63,566***	***25,647***	***161,674***	***3,895***	***418,564***
	MALE	<1 yr	1,798	885	289	1,508	100	4,580
		1-4 yrs	6,716	3,495	1,164	5,663	391	17,429
		5-14 yrs	9,048	8,107	2,648	11,163	689	31,655
		15-24 yrs	8,408	8,025	3,204	16,428	410	36,475
		25-34 yrs	40,445	14,928	3,366	24,146	704	83,589
		35-44 yrs	41,063	13,871	3,322	19,628	624	78,508
		45-54 yrs	30,949	10,223	4,230	18,464	554	64,420
		55-64 yrs	23,221	6,446	4,486	19,560	349	54,062
		65+ yrs	25,582	5,213	3,913	24,288	286	59,282
			187,230	***71,193***	***26,622***	***140,848***	***4,107***	***430,000***
TOTAL			***351,012***	***134,759***	***52,269***	***302,522***	***8,002***	***848,564***

Source: California Department of Finance, Demographic Research Unit. This report uses 2014 estimates.
Note: Am Indian=American Indian/Alaska Native; Asian/PI=Asian/Pacific Islander.

Appendix: Notifiable Disease - Historical Changes (2004 - 2015)

The diseases required to be reported to public health and disease definitions can change over time. Changes in disease definitions can impact the numbers of cases of disease reported to the SFDPH. Documentation of changes in definitions from 2004 – 2015 are outlined below.

For documentation of changes from 1986 to 2003, please refer to The San Francisco Communicable Disease Report 1986-2003 (May 2005), accessible at: https://www.sfcdcp.org/about/publications-data-and-reports.

Date of change	Disease	Description
2005	**Acute hepatitis B**	Includes perinatal cases starting in 2005.
June 2005	**Lyme disease**	Clinician reportable since 1989, and also became laboratory-reportable in June 2005.
June 2005	**Severe Acute Respiratory Syndrome (SARS)**	Became reportable in June 2005.
June 2005	**West Nile Disease**	Includes West Nile Fever, West Nile Meningitis, & West Nile Encephalitis, and became reportable in June 2005.
October 2006	**Non-O157:H7 Shiga toxin producing *Escherichia coli* (STEC) infections**	Non-O157:H7 STEC infections became notifiable in California in October 2006.
June 2007	**Anisakiasis**	Removed from the list of notifiable diseases in California in June 2007.
June 2007	**Avian Influenza (H5N1)**	Human infection with the influenza A H5N1 virus was added to the list of notifiable diseases in California in June 2007.
June 2007	**Chickenpox**	Previously all varicella hospitalizations and deaths (including shingles) were reportable, but as of June 2007, only chickenpox hospitalizations and deaths are reportable.
June 2007	**Creutzfeldt-Jakob. Disease (CJD) and other Transmissible Spongiform Encephalopathies**	Added to the list of notifiable diseases in California in June 2007.
June 2007	**Echinococcosis**	Removed from the list of notifiable diseases in California in June 2007.
June 2007	**Influenza Deaths, Pediatric**	Deaths associated with infection with an influenza virus are reportable in patients <18 years of age and were added to the list of notifiable diseases in California in June 2007.
June 2007	**Invasive *Haemophilus influenzae* Disease**	Reportable only in patients <15 years of age as of June 2007. Prior to June 2007, it was reportable in patients <30 years of age.
June 2007	**Lymphocytic Choriomeningitis**	Removed from the list of notifiable diseases in California in June 2007.
June 2007	**Reye Syndrome**	Removed from the list of notifiable diseases in California in June 2007.
June 2007	**Shiga toxin producing *Escherichia coli* (STEC) infections**	All *E. coli* O157 STEC (regardless of presence of H7 antigen) became notifiable in California in June 2007. Case counts and rates for STEC, *E. coli* O157:H7 and *E. coli* O157 non-H7 infections are presented together.
June 2007	**Taeniasis**	Added to the list of notifiable diseases in California in June 2007.

February 2008	**Severe *Staphylococcus aureus* infection**	Severe *Staphylococcus aureus* infection in a "previously healthy person" has been a reportable condition in California since February 13, 2008. For the purposes of surveillance, a severe infection is defined as one resulting in death or admission to an intensive care unit, and a previously healthy person is defined as one who has not been hospitalized or had surgery, dialysis, or residency in a long-term care facility in the past year and did not have an indwelling catheter or percutaneous medical device at the onset of illness. A *S. aureus* infection in a person without these healthcare-associated risk factors would be considered community-associated.
February 2008	**Smallpox**	Eradicated in 1979; reportable again since 2001 for bioterror surveillance.
2009	**Anaplasmosis/Ehrlichiosis**	Add Anaplasmosis to Ehrlichiosis
2009	**Poliovirus infection**	Change poliomyelitis to poliovirus infection.
July 2011	**Anthrax, animal**	Added to the list of notifiable diseases in California in July 2011.
July 2011	**Brucellosis, animal**	Added to the list of notifiable diseases in California in July 2011. Excludes infections due to *Brucella canis*
July 2011	**Hepatitis D**	Added to the list of notifiable diseases in California in July 2011.
July 2011	**Hepatitis E**	Added to the list of notifiable diseases in California in July 2011.
July 2011	**Influenza, deaths**	Added to the list of notifiable diseases in California in July 2011. Only deaths of laboratory-confirmed cases of patients ages 0-64 years.
July 2011	**Influenza, novel strains**	Added to the list of notifiable diseases in California in July 2011.
July 2011	**Rickettsial Diseases**	Added to the list of notifiable diseases in California in July 2011. Does not include Rocky Mountain Spotted Fever or Typhus.
July 2011	**Tularemia, animal**	Added to the list of notifiable diseases in California in July 2011.
July 2011	**Viral Hemorrhagic Fevers, animal**	Added to the list of notifiable diseases in California in July 2011.
July 2011	**Avian influenza (human)**	Removed from the list of notifiable diseases in California in July 2011.
July 2011	**Colorado Tick Fever**	Removed from the list of notifiable diseases in California in July 2011.
July 2011	**Hepatitis, Viral**	Removed from the list of notifiable diseases in California in July 2011.
July 2011	**Hepatitis, other, acute**	Removed from the list of notifiable diseases in California in July 2011.
July 2011	**Influenza (report in a person less than 18 years of age)**	Removed from the list of notifiable diseases in California in July 2011.
July 2011	**Kawasaki Syndrome**	Removed from the list of notifiable diseases in California in July 2011.
July 2011	**Rheumatic Fever, acute**	Removed from the list of notifiable diseases in California in July 2011.
July 2011	**Water-associated disease**	Removed from the list of notifiable diseases in California in July 2011. Includes Swimmer's Itch and Hot Tub Rash.
Jan 2014	**Pertussis**	Includes revision to clinical signs and symptoms for infants

Appendix: Definitions for Select Notifiable Diseases

Bacterial Meningitis	Excludes meningitis caused by *Neisseria meningitidis*, which is listed separately as Meningococcal Infections.
Cholera	Is caused by *Vibrio cholerae* serogroup O1 or O139.
Meningococcal Infection	*N. meningitidis* infection that results in meningitis, meningococcemia or other infections.
Outbreaks	Foodborne outbreaks are defined by 4 or more illnesses with a common food exposure. Other outbreaks of any disease, including those not reportable per CCR Title 17, are defined by an increase in cases above the expected number for a given time period. Additionally, cases may be subjectively classified as an outbreak based on common exposures or other epidemiologic information. In 2011, CDCU changed the way outbreak information was stored and processed; therefore, outbreak data from years before 2011 may not be comparable.
Salmonellosis	Includes the more than 2,500 recognized serotypes of *Salmonella* spp., excluding *S.* Typhi, which causes typhoid fever.
Streptococcal Infection	Individual cases of streptococcal infection are reportable only if diagnosed in foodhandlers or dairy workers.
Typhoid Fever	Is caused by infection with *S.* Typhi.
Vibriosis	Is caused by other *Vibrio cholerae* serogroups (non-O1, non-O139) and other *Vibrio* spp., including *V. parahaemolyticus* and *V. vulnificus*.
Viral Hemorrhagic Fever	Includes hemorrhagic fevers caused by filoviruses (e.g., Ebola, Marburg), arenaviruses (e.g., Lassa fever, Machupo), bunyaviruses (e.g., Crimean-Congo), and flaviviruses (e.g., Omsk). Yellow fever and dengue are listed separately and not included in this category.