Annual Report of Communicable Diseases in San Francisco 2014

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Communicable Disease Control & Prevention
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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 2014. 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.

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Citation

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

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Methods and Definitions

Data Collection

This report includes confirmed and probable reports of disease among San Francisco residents reported to SFDPH from January 1, 2014 through December 31, 2014*. 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), campylobacteriosis (confirmed, probable, and suspect cases), 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 2014 San Francisco population; the population count is estimated to be 840,392 (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 2014 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: http://sfcdcp.org/publications.html.

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 2014, there were 175 female cases of campylobacteriosis in San Francisco. The estimated number of female residents in 2014 was 414,163. Accordingly, the incidence among females was:

$$IR_{Campy2014_{Females}} = \left(175 \big/ 414{,}163 \right) \times 100{,}000 = 42.3 \text{ cases per 100,000 population.}$$

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 2014, there were 405 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:

$$RSE_{Campy2014} = \left(\sqrt{1 \big/ 405} \right) \times 100 = 4.97\%$$

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

$$RSE_{TyphoidFever2014} = \left(\sqrt{1 \big/ 1} \right) \times 100 = 100\%$$

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 2014 giardiasis cases as an example, consider the difference between incidence among residents 1-4 years of age (rate=14.9, 95% CI=4.8-34.7) and those aged 35-44 years (rate=29.2, 95% CI=21.1-39.3). The range of possible values among the older age group is less than the range for children 1-4 years 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 2014). 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 2014. From TABLE 2, it is known that 17 cases were <1 year of age and 42 cases were 1-4 years of age. Similarly, the number of San Francisco residents in 2014 can be found in TABLE 5:

	Female	*Male*
<1 yr	4,341	4,517
1-4 yrs	16,473	17,155

Thus, the total number of cases <5 years of age = $(17 + 42) = 59$ and

the total population <5 years of age = $(4{,}341 + 16{,}473 + 4{,}517 + 17{,}155) = 42{,}486$ and

the rate of salmonellosis $= \left({}^{59}\!/_{42{,}486} \right) \times 100{,}000 = 138.9$ cases per 100,000 population.

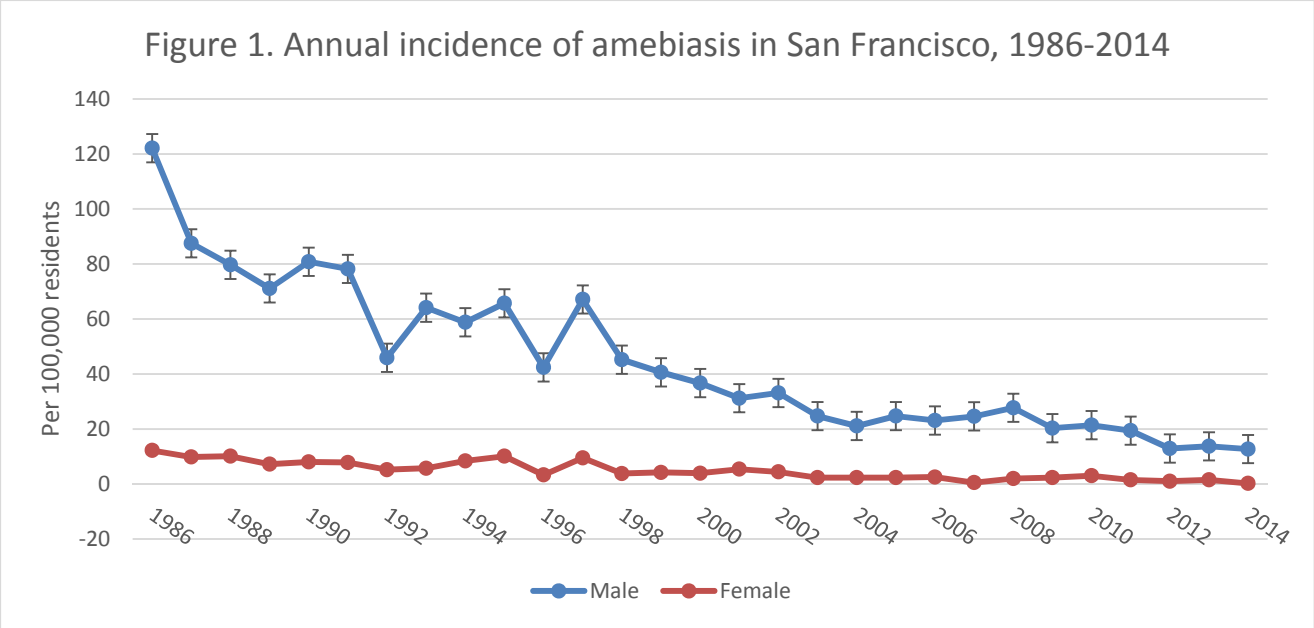
Notes on 2014 Surveillance Data

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

AMEBIASIS

Amebiasis, an enteric protozoal infection, is among the most frequently reported diseases in San Francisco. Rates of amebiasis declined overall from 2004 to 2014. In the last 25 years, amebiasis rates were highest in 1986 (67.3 cases per 100,000 residents) and have generally been declining since, with the lowest rate observed in 2014 (6.5 cases per 100,000 residents).

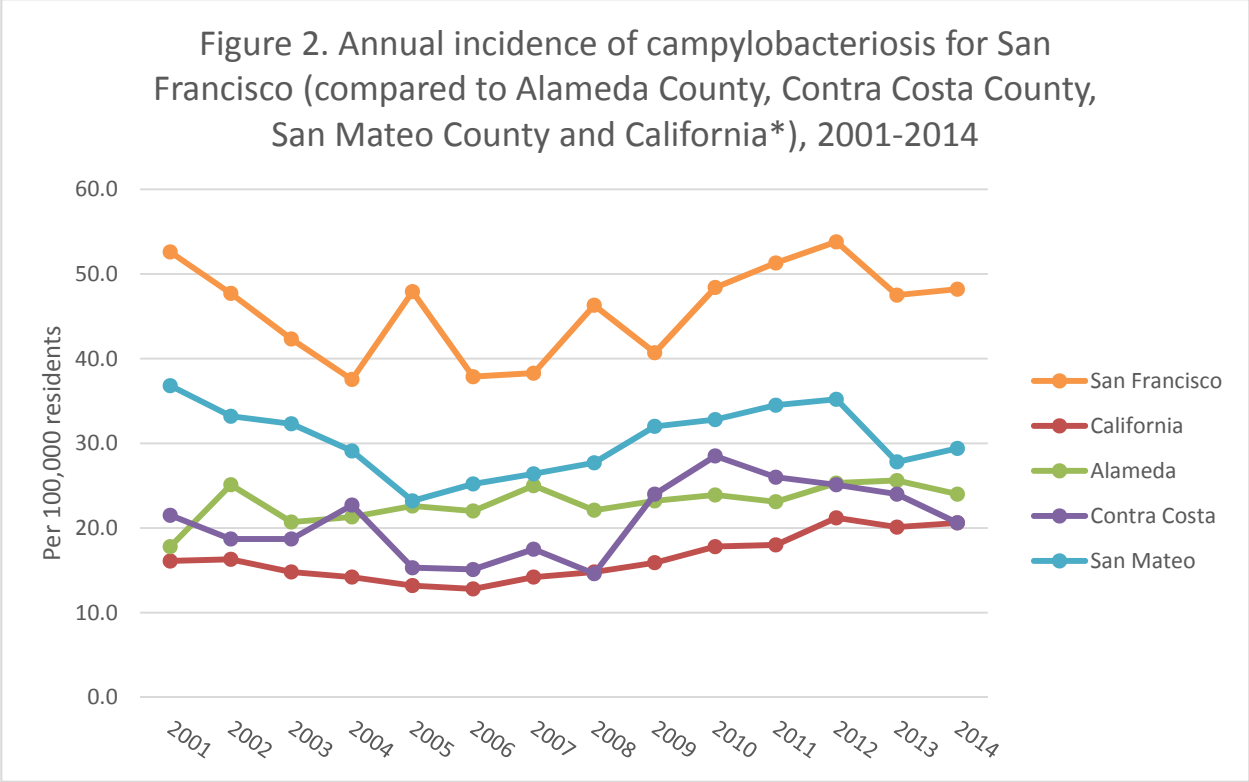
In San Francisco, rates of amebiasis were higher in males than in females for all years for which data was available (1986-2014). For these diseases, the disparity between the rates of disease in males and females has decreased over time. In 2014, the rate of amebiasis in women was 0.2 (N=1; 95% CI: 0.0-1.3) and in men was 12.7 (N=54; 95% CI: 9.5-16.5). This disparity is attributed to transmission of these infections through sexual contact among MSM (men who have sex with men)[7].



CAMPYLOBACTERIOSIS

Campylobacter infections remained the most frequently reported enteric disease in San Francisco (n=405, rate=48.2 per 100,000 residents, 95% CI: 43.6-53.1), with rates higher than any other California jurisdiction (see Figure 2 for comparison to select CA jurisdictions). Of the 405 cases reported in 2014, 55 (13.6%) were classified as suspect, a much greater number than those from 2010 to 2013. In previous annual reports, only confirmed and probable cases were included. See Culture Independent Diagnostic Tests and Surveillance Case Definitions of this report for more information.

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; the rate in 2014 (n=405, rate=48.2 per 100,000 residents, 95% CI: 43.6-53.1) was statistically significantly higher than in 2004 (n=297, rate=37.5 per 100,000 residents, 95% CI: 33.4-42.1).



*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*[8,9].

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, 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 to perform tests is required, and costs are potentially lower. Unfortunately, without a culture or isolate, subtyping and genotyping (PFGE, MLVA, WGS) 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[10]. 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 additional pathogens since the panels may include pathogens not normally 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. Because of the increased use of CIDT in 2014 by laboratories reporting to SFDPH, suspect cases of campylobacteriosis, salmonellosis, and shigellosis were included in the case counts for this report*.

*As use of CIDTs has risen, case definitions for these three diseases (in 2015 for campylobacteriosis and 2017 for salmonellosis and shigellosis) were revised and those cases of disease diagnosed by CIDT without culture confirmation are now categorized as probable.

EBOLA OUTBREAK IN WEST AFRICA & MONITORING OF TRAVELERS FROM EBOLA-AFFECTED COUNTRIES

The 2014 Ebola Virus Disease (EVD) outbreak in West Africa was the largest outbreak of Ebola in history, with over 28,000 cases and over 11,000 deaths[11]. The outbreak started in December 2013 and was first reported to the World Health Organization (WHO) in March 2014; the outbreak primarily affected the countries of Guinea, Liberia, and Sierra Leone. In September 30, 2014, the Centers for Disease Control and Prevention (CDC) confirmed the first imported case of Ebola in the United States in a man who traveled from Liberia and was hospitalized in Dallas, Texas[12]. Subsequently, two healthcare workers caring for that patient in Dallas, Texas were diagnosed with Ebola. Beginning in October 2014, because of increased concerns related to Ebola-imported cases to the U.S., CDC required daily monitoring for travelers returning from Ebola-affected countries[13]. The SFDPH conducted monitoring according to guidance from CDC and from the California Department of Public Health (CDPH). SFDPH staff interviewed returning travelers to assess their risk for developing Ebola and monitored travelers for symptoms via phone and/or video conference on a daily basis for up to 21 days. Monitoring ended in January 2016 once the WHO declared all three Ebola-affected countries (Guinea, Liberia and Sierra Leone) free of EVD[14]. SFDPH conducted Ebola monitoring for 112 instances of travel (several travelers made multiple trips). No cases of Ebola were identified in San Francisco or California overall during the outbreak; four cases in total were diagnosed in the U.S [12].

ENTEROVIRUS-D68

Enteroviruses are ubiquitous viruses that can cause respiratory and gastrointestinal illnesses, rash and neurologic illnesses. Enteroviruses are generally transmitted from person to person via direct contact with virus shed in respiratory secretions and stool. While most infections cause mild or no symptoms, some can be severe. There are more than 100 types that cause approximately 10-15 million infections in the United States each year. Enteroviruses typically occur in the summer and fall.

Since the original isolation of enterovirus-D68 (EV-D68) in 1962, it has rarely been reported in the USA. In summer and fall 2014, the United States experienced a nationwide outbreak of EV-D68, mainly among children. EV-D68 infection was associated with severe respiratory illness, including difficulty breathing, hypoxemia, and wheezing. In California, CDPH requested that local health departments submit samples from all rhinovirus/enterovirus positive specimens from hospitalized children less than 18 years of age or from clusters of cases of any age to CDPH for further typing. From mid-August 2014 to January 15, 2015, 1,153 people in 49 states and the District of Columbia were identified with respiratory illness caused by EV-D68; EV-D68 was detected in specimens from 14 patients who died in the U.S. in 2014[15]. Almost all of the confirmed cases were among children, many whom had asthma or a history of wheezing. Six cases were reported in San Francisco residents between September 2014 to December 2014, and all six were children; none were fatal. It is likely that many thousands of mild EV-D68 infections occurred across the United States in people who did not seek medical treatment and/or get tested.

LYME DISEASE

Since 1989, Lyme Disease (LD) has been a clinician-reported disease, and in June 2005, laboratories became legally required to report cases of LD to SFDPH. Interpretation of laboratory testing for LD has been and continues to be a challenge, because some commercial labs use assays where the accuracy and usefulness has not been adequately established[16]. In 2014, three cases of LD were reported (rate=0.4 per 100,000). Exposure information for all three cases was incomplete; only one of the three cases had available information regarding location of potential tick exposure and reported travel to a LD endemic area outside California.

OUTBREAKS

In 2014, CDCU identified and investigated a total of 23 communicable disease outbreaks, which is fewer than the 36 outbreaks identified and investigated in 2013. It is unclear what factors contribute to the fluctuation in the number of outbreaks identified and reported, but this decrease could be a result of changes in reporting practices or a true change in the number of outbreaks.

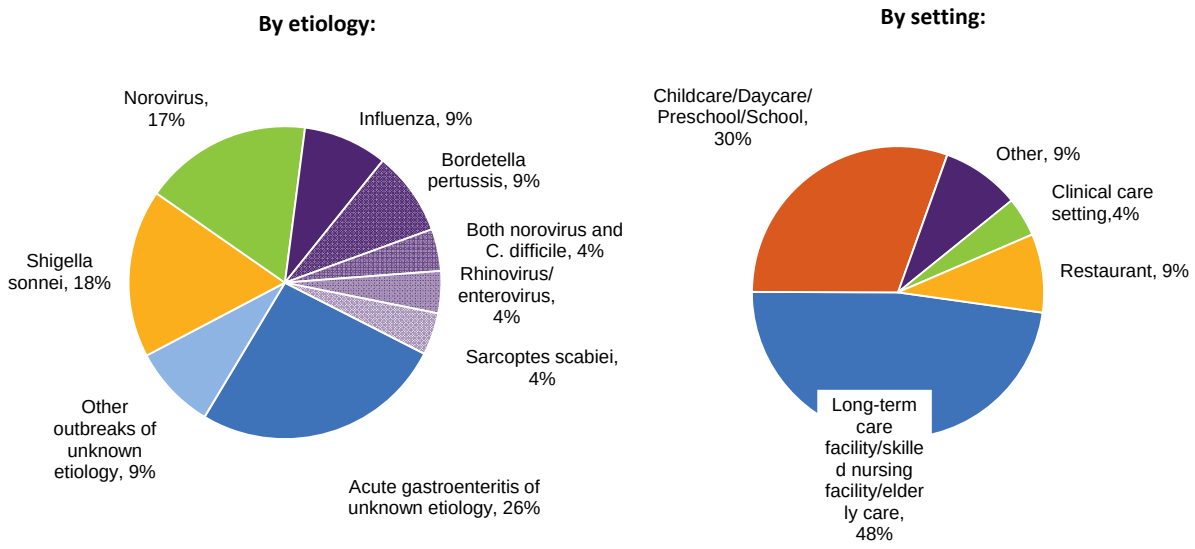
- Etiology: Fifteen of the 23 (65%) outbreaks involved gastrointestinal illness (with two suspected to be foodborne) and five (22%) involved respiratory illness.
    - Gastrointestinal outbreaks: Four (17%) of the 23 outbreaks were caused by *Shigella sonnei* (including a large city-wide outbreak and a sub-outbreak within the city-wide outbreak; all confirmed) and four (17%) were caused by norovirus (two confirmed, two

suspected). One (4%) outbreak was associated with both norovirus and *C. difficile*, but the most likely etiologic agent was norovirus.

- Respiratory outbreaks: Two (9%) of the 23 outbreaks were caused by influenza (both influenza A; both confirmed), two (9%) by *Bordetella pertussis* (both confirmed), and one (4%) by Rhinovirus/enterovirus (confirmed).
- CDCU also provided consultation and follow-up for one (4%) confirmed outbreak of scabies (*Sarcoptes scabiei*).

- Setting: Eleven (48%) of the 23 outbreaks were associated with a long-term care facility, a skilled nursing facility, or elderly care; seven (30%) were associated with childcare, daycare, preschool or schools; two (9%) were associated with a restaurant; one (4%) was associated with a health care setting, and two (9%) were associated with other types of settings.

Figure 3. Number and percent of reported outbreaks, 2014, San Francisco



PERTUSSIS

Pertussis is endemic in the U.S. with epidemic cycles every three to five years. In 2014, there was a cyclic increase in cases in California. Seventy-nine cases were reported among San Francisco residents; no deaths occurred. The incidence of pertussis in 2014 (9.4 cases per 100,000 residents, 95% CI: 7.4-11.7) was significantly higher than the incidence in 2013 (5.4 cases per 100,000 residents, 95% CI: 3.9-7.2).

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 tests, introduction of new laboratory tests such as 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. [17]

In 2014, rates of pertussis among San Francisco residents were highest among those under 15 years of age, with the highest rate among children aged 5-14 years (63.2 cases per 100,000 residents, 95% CI: 44.7-86.8). Since 2009, the incidence of pertussis among children aged 5-14 years has been increasing.

People of all ages can get pertussis, though death and serious complications are most likely in young infants. In October 2012, the Advisory Committee on Immunization Practices (ACIP) recommended pertussis immunization during every pregnancy to help prevent morbidity and mortality in infants[18]. In 2014, the case definition for pertussis was changed to better capture the burden of disease in infants who do not meet the traditional clinical case definition.

RABIES

Six rabid bats were detected in San Francisco in 2014. 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[19]. Rabies was not detected in any animals aside from bats in 2014, and no cases of rabies have been reported in terrestrial animals (e.g. dogs, cats, skunks, raccoons, foxes, coyotes) in San Francisco for over 60 years[19]. 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

Since 2005, rates of salmonellosis have been increasing in San Francisco, with 2013 and 2014 having the highest 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 2014, 7 of the 180 cases (3.9%) reported in Table 1 were suspect; all seven suspect salmonella cases were diagnosed by CIDT alone. In previous SFDPH annual communicable disease reports, only confirmed and probable cases were included.

The increase in rates starting in 2013 is partly due to a prolonged multistate outbreak of *Salmonella* Heidelberg associated with chicken from three specific processing plants[20]; however, the increase is not

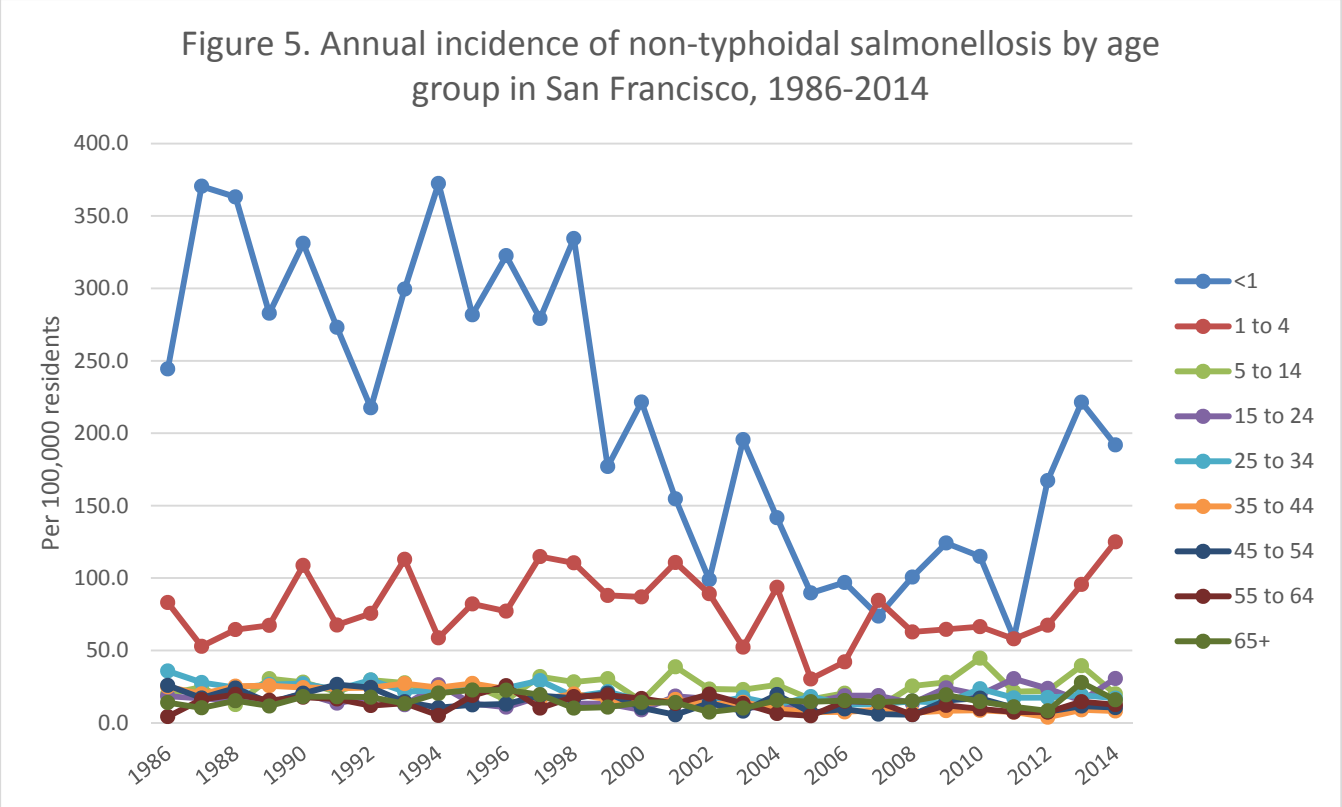
completely attributable to the outbreak since serotypes other than Heidelberg also contributed to the increase. Other Bay Area counties also saw increases (see Figure 4).

Figure 4. Annual incidence per 100,000 population of salmonellosis, non-typhoidal in San Francisco Bay Area Counties*, 2012-2014

County	2012 Rate	2013 Rate	2014 Rate
Alameda	14.5	15.7	17.5
Contra Costa	11.8	12.8	14.7
Marin	11.0	14.4	23.3
Napa	19.4	16.4	19.8
San Francisco	14.5	23.4	21.4
San Mateo	19.0	22.5	18.7
Santa Clara	15.2	19.2	19.6
Solano	11.2	13.0	12.8
Sonoma	13.1	13.2	12.1

*Rates for Alameda County, Contra Costa County, Marin County, Napa County, San Mateo County, Santa Clara County, Solano County, and Sonoma County from California Department of Public Health Report, *Yearly Summary Reports of Selected General Communicable Diseases in California*[9].

Rates of salmonellosis in 2014 were highest among those under age one year (191.9 per 100,000 residents, 95% CI: 111.8-307.3) and among 1-4 year olds (124.9 per 100,000 residents, 95% CI: 90.0-168.8), which is consistent with data from previous years (see Figure 5).



The most frequently reported *Salmonella* serotypes in 2014, which together accounted for 65.3% of the 180 cases with serotype information, were as follows: *S.* Enteriditis (18.2%), *S.* Infantis (14.7%), *S.* Adelaide (8.2%), *S.* I 4,5,12:i:- (7.0%), *S.* Typhimurium (5.3%), *S.* Heidelberg (4.7%), *S.* Muenchen (3.5%), and *S.* Saint-Paul (3.5%). The proportion of *S.* Enteritidis cases in 2014 (18.2%) is slightly higher than in 2013 (15.9%) but slightly lower than in 2012 (20.0%).

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.

From 2007 to 2014, 122 cases of STEC were reported among San Francisco residents. The number of cases doubled from 2012 (N=12) to 2013 (N=26), primarily due to two *E. coli O157* outbreaks: an outbreak associated with a San Francisco restaurant and a multijurisdictional outbreak associated with pre-packaged salads[21]. In 2014, case counts for STEC remained high with 25 cases reported (3.0 cases per 100,000 residents), and the number of Shiga toxin in feces cases increased from one in 2013 to seven in 2014; no cases of HUS were reported in 2014. This recent increase in STEC cases is consistent

with statewide trends[9]. 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[22]. 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.

SHIGELLOSIS

Of the 269 shigellosis cases reported in 2014, five (1.9%) were classified as suspect. All five suspect cases in 2014 were diagnosed by CIDT. In previous SFDPH annual communicable disease reports, only confirmed and probable cases were included.

The rates of shigellosis in San Francisco are higher compared to other California jurisdictions[2] and have been increasing since 2008, with a significant increase from 2013 (14.3 cases per 100,000 residents) to 2014 (31.8 cases per 100,000 residents). The high incidence of shigellosis in San Francisco is partly attributable to sexual transmission among MSM[23]. The increase in 2014 is attributed to several outbreaks, including a citywide outbreak of ciprofloxacin-resistant shigellosis that disproportionately affected homeless and marginally housed individuals in San Francisco. A greater proportion of black San Francisco residents were affected in 2014 than in other years. While not statistically significant, in 2014, the incidence of shigellosis among black San Francisco residents (63.2 per 100,000 residents, 95% CI: 43.5-88.8) was higher than the shigellosis incidence of white San Francisco residents (41.6 per 100,000 residents, 95% CI: 35.1-48.8); however, this is a change from 2013 when the incidence of shigellosis among black San Francisco residents (n=1, 1.9 per 100,000 residents, 95% CI: 0.0-10.7) was significantly lower than for white San Francisco residents (20.1 per 100,000 residents, 95% CI: 15.7-25.5).

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[24].

A total of 247 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 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 (28%) 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.

WEST NILE DISEASE AND ASYMPTOMATIC INFECTION

Since West Nile Virus (WNV) disease became reportable in June 2005, seven cases have been reported, including one in 2013. Of those seven cases, four had known travel outside San Francisco; one case was related to an organ transplant; and two cases had no known travel history and were likely exposed in San Francisco. No cases of West Nile disease were reported in 2014.

Asymptomatic infection with WNV, which is generally identified in blood donors, is also reportable to CDPH. Blood donors who test positive for WNV may not necessarily be ill, nor will they initially have positive laboratory test results. The first case of West Nile Virus infection in an asymptomatic blood donor in San Francisco was reported in 2014.

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TABLE 1: FREQUENCY OF REPORTABLE DISEASES IN SAN FRANCISCO, 2014

Disease	N	Rate
Amebiasis	55	6.5
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 (2)	405	48.2
Chickenpox, Severe (Death or Hosp)	1	0.1 *
Chikungunya	2	0.2 *
Cholera	0	0.0
Ciguatera Fish Poisoning	0	0.0
Coccidioidomycosis	5	0.6 *
Creutzfeldt-Jakob Dis. or Other TSE (3)	4	0.5 *
Cryptosporidiosis	16	1.9 *
Cysticercosis or Taeniasis	0	0.0
Dengue	8	1.0 *
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	1	0.1 *
Encephalitis, Parasitic	0	0.0
Encephalitis, Unspecified	1	0.1 *
Encephalitis, Total	2	0.2 *
Giardiasis	164	19.5
Haemophilus influenzae, Invasive (4)	2	1.9 *
Hantavirus Infection	0	0.0
Hemolytic Uremic Syndrome (5)	0	0.0
Hepatitis A	6	0.7 *
Hepatitis B, Acute (6)	2	0.2 *
Hepatitis C, Acute	0	0.0
Hepatitis Delta	0	0.0
Hepatitis E	1	0.1 *
Influenza, Deaths, 0-64 years of age	1	0.1 *
Legionellosis	2	0.2 *
Leprosy	0	0.0
Leptospirosis	0	0.0
Listeriosis	8	1.0 *
Lyme Disease	3	0.4 *
Malaria	8	1.0 *
Measles	0	0.0

Disease	N	Rate
Meningitis, Bacterial	6	0.7 *
Meningitis, Fungal	2	0.2 *
Meningitis, Parasitic	0	0.0
Meningitis, Unspecified	0	0.0
Meningitis, Viral	3	0.4 *
Meningitis, Total	11	1.3 *
Meningococcal Infection	2	0.2 *
Mumps	1	0.1 *
Outbreaks, Foodborne	2	N/A
Outbreaks, Non-Foodborne	21	N/A
Paralytic Shellfish Poisoning	0	0.0
Pertussis	79	9.4
Plague	0	0.0
Poliovirus Infection	0	0.0
Psittacosis	0	0.0
Q Fever	0	0.0
Rabies, Animal	6	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	1	0.1 *
Rubella	0	0.0
Rubella, Congenital	0	0.0
STEC including E. coli O157	25	3.0
Salmonellosis (2)	180	21.4
Scombroid Fish Poisoning	1	0.1 *
Severe Acute Respiratory Syndrome	0	0.0
Severe Staph. aureus infection	0	0.0
Shiga toxin (detected in feces)	7	0.8 *
Shigellosis, Group B: *S. flexneri*	65	7.7
Shigellosis, Group D: *S. sonnei*	190	22.6
Shigellosis, Other Group (2)	12	1.4 *
Shigellosis, Total (2)	267	31.8
Smallpox	0	0.0
Streptococcal Infection	0	0.0
Tetanus	0	0.0
Toxic Shock Syndrome	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	21	2.5
Viral Hemorrhagic Fever	0	0.0
West Nile Asymptomatic blood donor	1	0.1 *
West Nile Disease	0	0.0
West Nile Infections, Total (7)	1	0.1 *
Yellow Fever	0	0.0
Yersiniosis	4	0.5 *

(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, 2014

	Amebiasis					Campylobacteriosis					Giardiasis				
Year	Age	N	Rate	95%CI		Age	N	Rate	95% CI		Age	N	Rate	95%CI	
2014	0-14 yrs	0	0.0 *			<1 yr	9	101.6 *	46.5	192.9	<1 yr	0	0.0 *		
	15-24 yrs	1	1.3 *	0.0	7.4	1-4 yrs	28	83.3	55.3	120.3	1-4 yrs	5	14.9 *	4.8	34.7
	25-34 yrs	15	8.8 *	4.9	14.5	5-14 yrs	35	58.2	40.6	81.0	5-14 yrs	5	8.3 *	2.7	19.4
	35-44 yrs	11	7.5 *	3.7	13.3	15-24 yrs	31	41.3	28.1	58.6	15-24 yrs	4	5.3 *	1.5	13.6
	45-54 yrs	19	16.6 *	10.0	25.9	25-34 yrs	105	61.4	50.2	74.4	25-34 yrs	35	20.5	14.3	28.5
	55-64 yrs	7	6.8 *	2.7	13.9	35-44 yrs	62	42.0	32.2	53.9	35-44 yrs	43	29.2	21.1	39.3
	65+ yrs	2	1.6 *	0.2	5.7	45-54 yrs	43	37.6	27.2	50.6	45-54 yrs	36	31.4	22.0	43.5
	Total	55	6.5	4.9	8.5	55-64 yrs	41	39.6	28.4	53.7	55-64 yrs	21	20.3	12.6	31.0
						65+ yrs	51	40.4	30.1	53.1	65+ yrs	15	11.9 *	6.6	19.6
						Total	405	48.2	43.6	53.1	Total	164	19.5	16.6	22.7

	Pertussis					Salmonellosis				
Year	Age	N	Rate	95% CI		Age	N	Rate	95% CI	
2014	<1 yr	2	22.6 *	2.7	81.6	<1 yr	17	191.9 *	111.8	307.3
	1-4 yrs	6	17.8 *	6.5	38.8	1-4 yrs	42	124.9	90.0	168.8
	5-14 yrs	38	63.2	44.7	86.8	5-14 yrs	12	20.0 *	10.3	34.9
	15-24 yrs	20	26.6	16.3	41.1	15-24 yrs	23	30.6	19.4	46.0
	25-34 yrs	1	0.6 *	0.0	3.3	25-34 yrs	29	17.0	11.4	24.4
	35-44 yrs	4	2.7 *	0.7	6.9	35-44 yrs	12	8.1 *	4.2	14.2
	45-54 yrs	3	2.6 *	0.5	7.7	45-54 yrs	12	10.5 *	5.4	18.3
	55-64 yrs	3	2.9 *	0.6	8.5	55-64 yrs	13	12.6 *	6.7	21.5
	65+ yrs	2	1.6 *	0.2	5.7	65+ yrs	20	15.8	9.7	24.4
	Total	79	9.4	7.4	11.7	Total	180	21.4	18.4	24.8

	Shigellosis (Total)					Shigellosis (flexneri)					Shigellosis (sonnei)				
Year	Age	N	Rate	95%CI		Age	N	Rate	95%CI		Age	N	Rate	95% CI	
2014	<1 yr	0	0.0 *			0-24 yrs	0	0.0 *			<1 yr	0	0.0 *		
	1-4 yrs	6	17.8 *	6.5	38.8	25-34 yrs	12	7.0 *	3.6	12.3	1-4 yrs	6	17.8 *	6.5	38.8
	5-14 yrs	6	10.0 *	3.7	21.7	35-44 yrs	16	10.9 *	6.2	17.6	5-14 yrs	5	8.3 *	2.7	19.4
	15-24 yrs	12	16.0 *	8.3	27.9	45-54 yrs	20	17.5	10.7	27.0	15-24 yrs	12	16.0 *	8.3	27.9
	25-34 yrs	45	26.3	19.2	35.2	55-64 yrs	12	11.6 *	6.0	20.3	25-34 yrs	30	17.6	11.8	25.1
	35-44 yrs	60	40.7	31.1	52.4	65+ yrs	5	4.0 *	1.3	9.2	35-44 yrs	41	27.8	20.0	37.7
	45-54 yrs	81	70.7	56.2	87.9	Total	65	7.7	6.0	9.9	45-54 yrs	57	49.8	37.7	64.5
	55-64 yrs	45	43.5	31.7	58.2						55-64 yrs	32	30.9	21.1	43.6
	65+ yrs	12	9.5 *	4.9	16.6						65+ yrs	7	5.5 *	2.2	11.4
	Total	267	31.8	28.1	35.8						Total	190	22.6	19.5	26.1

**=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, 2014

	Amebiasis					Campylobacteriosis					Giardiasis				
Year	Sex	N	Rate	95% CI		Sex	N	Rate	95% CI		Sex	N	Rate	95% CI	
2014	Male	54	12.7	9.5	16.5	Male	230	54.0	47.2	61.4	Male	126	29.6	24.6	35.2
	Female	1	0.2*	0.0	1.3	Female	175	42.3	36.2	49.0	Female	36	8.7	6.1	12.0
	Unk	0				Unk	0				Unk	2			
	Total	55	6.5	4.9	8.5	Total	405	48.2	43.6	53.1	Total	164	19.5	16.6	22.7

	Pertussis					Salmonellosis				
Year	Sex	N	Rate	95% CI		Sex	N	Rate	95% CI	
2014	Male	43	10.1	7.3	13.6	Male	95	22.3	18.0	27.2
	Female	36	8.7	6.1	12.0	Female	85	20.5	16.4	25.4
	Unk	0				Unk	0			
	Total	79	9.4	7.4	11.7	Total	180	21.4	18.4	24.8

	Shigellosis (Total)					Shigellosis (flexneri)					Shigellosis (sonnei)				
Year	Sex	N	Rate	95% CI		Sex	N	Rate	95% CI		Sex	N	Rate	95% CI	
2014	Male	210	49.3	42.8	56.4	Male	61	14.3	10.9	18.4	Male	139	32.6	27.4	38.5
	Female	57	13.8	10.4	17.8	Female	4	1.0*	0.3	2.5	Female	51	12.3	9.2	16.2
	Unk	0				Unk	0				Unk	0			
	Total	267	31.8	28.1	35.8	Total	65	7.7	6.0	9.9	Total	190	22.6	19.5	26.1

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, 2014

Year	Race/ Ethnicity	Amebiasis				Pertussis				Salmonellosis			
		N	Rate	95% CI		N	Rate	95% CI		N	Rate	95% CI	
2014	White	34	9.7	6.7	13.6	24	6.9	4.4	10.2	50	14.3	10.6	18.9
	Black	1	1.9*	0.0	10.7	2	3.8*	0.5	13.8	5	9.6*	3.1	22.3
	Asian/PI	2	0.7*	0.1	2.4	6	2.0*	0.7	4.4	76	25.4	20.0	31.8
	Hispanic	10	7.6*	3.6	13.9	17	12.9*	7.5	20.6	27	20.4	13.5	29.7
	Other/Unk	8				30				22			
	Total	55	6.5	4.9	8.5	79	9.4	7.4	11.7	180	21.4	18.4	24.8

Year	Race/ Ethnicity	Shigellosis (Total)				Shigellosis (flexneri)				Shigellosis (sonnei)			
		N	Rate	95% CI		N	Rate	95% CI		N	Rate	95% CI	
2014	White	145	41.6	35.1	48.9	34	9.7	6.7	13.6	103	29.5	24.1	35.8
	Black	33	63.2	43.5	88.8	7	13.4*	5.4	27.6	26	49.8	32.5	73.0
	Asian/PI	11	3.7*	1.8	6.6	1	0.3*	0.0	1.9	10	3.3*	1.6	6.1
	Hispanic	23	17.4	11.0	26.1	10	7.6*	3.6	13.9	12	9.1*	4.7	15.9
	Other/Unk	55				13				39			
	Total	267	31.8	28.1	35.8	65	7.7	6.0	9.9	190	22.6	19.5	26.1

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, 2014

Year	Sex	Age	White	Hispanic	Black	Asian/PI	Am Indian	Total
2014	FEMALE	<1 yr	1,697	849	278	1,423	94	4,341
		1-4 yrs	6,382	3,355	1,089	5,290	357	16,473
		5-14 yrs	8,369	7,409	2,567	10,654	584	29,583
		15-24 yrs	10,670	7,880	3,400	15,250	445	37,645
		25-34 yrs	41,065	12,327	3,774	27,743	821	85,730
		35-44 yrs	32,227	10,476	3,207	22,743	556	69,209
		45-54 yrs	18,985	7,115	3,328	21,764	388	51,580
		55-64 yrs	17,444	5,753	3,432	23,055	274	49,958
		65+ yrs	25,894	7,096	4,521	31,845	288	69,644
			162,733	***62,260***	***25,596***	***159,767***	***3,807***	***414,163***
	MALE	<1 yr	1,766	883	289	1,480	99	4,517
		1-4 yrs	6,624	3,457	1,153	5,533	388	17,155
		5-14 yrs	8,358	7,820	2,602	11,094	638	30,512
		15-24 yrs	8,929	8,296	3,269	16,529	422	37,445
		25-34 yrs	41,464	15,213	3,406	24,390	715	85,188
		35-44 yrs	41,183	13,551	3,431	19,460	617	78,242
		45-54 yrs	29,910	9,655	4,356	18,455	545	62,921
		55-64 yrs	23,179	6,104	4,408	19,528	320	53,539
		65+ yrs	24,703	4,920	3,703	23,114	270	56,710
			186,116	***69,899***	***26,617***	***139,583***	***4,014***	***426,229***
			348,849	***132,159***	***52,213***	***299,350***	***7,821***	***840,392***

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 - 2014)

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 – 2014 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: http://sfcdcp.org/publications.html.

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	Are *N. meningitidis* infections that result 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.