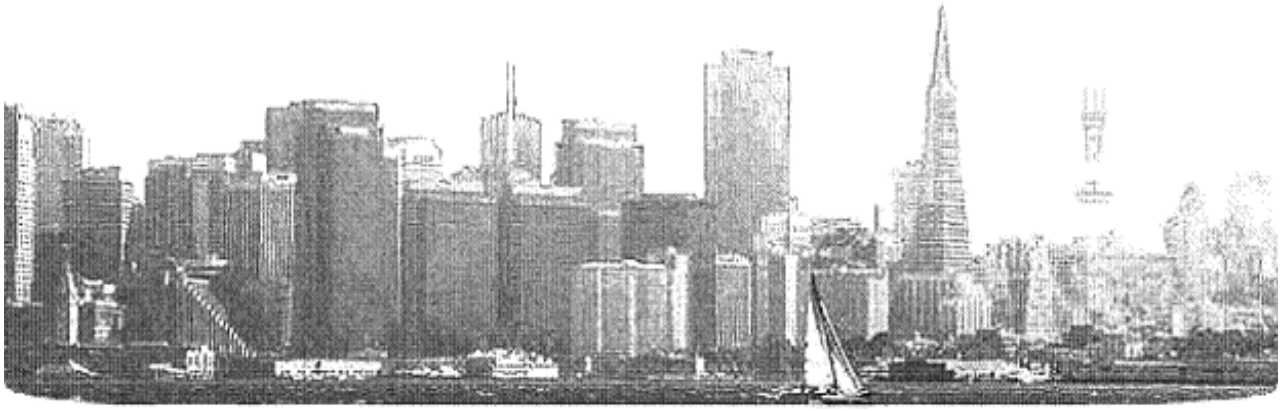
Annual Report of Communicable Diseases in San Francisco

2010



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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 2010. Seven 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. 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. Readers can access previous reports at http://www.sfcdcp.org for historical context of disease incidence in San Francisco.

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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 disease incidents reported to SFDPH from January 1, 2010 through December 31, 2010. 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 Chronic Viral Hepatitis Registry Project within CDCU. Data from 2010 is summarized in the Chronic Hepatitis B and Hepatitis C Infection Surveillance Report, 2010, and may be accessed at: http://sfcdcp.org/document.html?id=749.

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

Population Under Surveillance

CDCU manages cases of CCR Title 17 reportable diseases that occur in City and County of San Francisco residents. 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 2007 for the 2010 San Francisco population, which estimates the population count to be 818,162 (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 mandated to be followed-up 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 .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. This replacement method was required for one case of reportable conditions in 2010. Twenty-seven reportable cases were missing age information. 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. There were no changes in disease definitions in 2010.

Please see this report's appendices for a list of notifiable disease definition changes from 2004 to 2009 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 9.2 (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, pediatric influenza deaths, 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 pediatric influenza death rate, it was persons less than 15 years of age and persons less than 18 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 2010, there were 177 female cases of campylobacteriosis in San Francisco. The estimated number of female residents in 2010 was 397,588. Accordingly, the incidence among females was:

$$IR_{Campy2010_{Females}} = \left(177 \big/ 397{,}558 \right) \times 100{,}000 = 44.5 \text{ cases per 100,000 population .}$$

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 percents 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 2010, there were 396 cases of campylobacteriosis cases reported in San Francisco and three cases of acute typhoid fever. Accordingly, the relative standard errors for campylobacteriosis and acute typhoid fever are:

$$RSE_{Campy2010} = \left(\sqrt{1/396}\right) \times 100 = 5.0\%$$

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

$$RSE_{TyphoidFever2010} = \left(\sqrt{1/3}\right) \times 100 = 57.7\%$$

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

Exact Confidence Limits

95% Exact Confidence Intervals (95% CI) for incidence rates were approximated from the gamma distribution[6]. Confidence limits were rounded to one decimal place.

Because the rates presented in this report are estimates of the true incidence of reported communicable diseases in San Francisco, confidence limits are used to describe the uncertainty of an estimate and provide a range in which the true rate occurs. In 2010, the rate of giardiasis in residents 25-34 years of age was 18.4 cases per 100,000 people (95% CI=11.9-27.1). This confidence interval indicates that the true giardiasis rate in residents aged 25-34 years is likely to lie somewhere between 11.9 and 27.1 cases per 100,000 people. The interval therefore 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 2010 giardiasis cases as an example, consider the difference between incidence among residents 1-4 years of age (rate=37.5, 95% CI=20.0-64.2) and those aged 25-34 years as described above. The range of possible values among the older age group is approximately one-third as wide as the range for children 1-4 years. The rate among residents 25-34 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 of zero.

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, seven diseases were selected for inclusion in this report.

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 2010). 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 2010. From TABLE 2, it is known that 10 cases were <1 year of age and 23 cases were 1-4 years of age. Similarly, the number of San Francisco residents in 2010 can be found in TABLE 5:

	Female	*Male*
<1 yr	4,268	4,434
1-4 yrs	16,999	17,651

Thus, the total number of cases <5 years of age = $(10 + 23) = 33$ and

the total population <5 years of age = $(4{,}268 + 16{,}999 + 4{,}434 + 17{,}651) = 43{,}352$ and

the rate of salmonellosis $= \left({}^{33}\!/_{43{,}352} \right) \times 100{,}000 = 76.1$ cases per 100,000 population .

Notes on 2010 Surveillance Data

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

- *Amebiasis:* Amebiasis is one of the most frequently reported diseases in San Francisco. In the last 25 years, amebiasis rates were highest in 1986 (67.3 cases per 100,000 residents, 95% CI 61.5-73.4) and generally declined until 2003. From 2003 to 2010, rates have remained between 12 to 15 cases per 100,000 residents. The lowest rate observed to date was in 2009 (11.5 cases per 100,000 residents, 95% CI 9.3-14.1); the 2010 rate was slightly higher (12.5 cases per 100,000 residents, 95% CI 10.2-15.1), though this increase was not statistically significant. When comparing 2009 and 2010 rates among race/ethnicity groups, rates for most groups remained constant; the only exception was among Hispanic residents, where the rate has been increasing from a 24-year low in 2007 (12.0 cases per 100,000 residents, 95% CI 6.6-20.2) to a rate of 23.6 cases per 100,000 residents (95% CI 15.4-34.6) in 2010, though this increase was also not statistically significant. The 2010 rate in Hispanic residents was similar to those observed in 2002-2004 (18.4 cases per 100,000 residents, three-year moving average).

  Counts and rates of amebiasis in San Francisco in 2010 may not be comparable to previous years' because SFDPH began to receive laboratory reports of amebiasis cases from one large regional laboratory in June 2010 that had not previously reported these cases. Therefore, an increase in 2010 amebiasis counts in San Francisco may be attributable to a reporting artifact rather than an actual increase in amebiasis incidence within San Francisco. It is also unknown whether the patient population served by this regional laboratory greatly differs in demographics compared with the overall San Francisco population, thus affecting the rates of amebiasis differently in various sex, age or race/ethnicity groups.

- *Campylobacteriosis: Campylobacter* infections remained the most frequently reported enteric disease in San Francisco (n=396, rate=48.4 cases per 100,000 residents), and the highest rates of campylobacteriosis in San Francisco occurred in children under five years of age. Since 1990, rates of campylobacteriosis have generally been decreasing, most precipitously among children under five years of age (310.0 cases per 100,000 residents under five years of age in the 1990-1992 period; 102.2 cases per 100,000 residents under five years of age in the 2007-2009 period). This trend has also been observed across California (CA) between 2001 and 2009 for children under five years of age (children under one year of age: 45.3 cases per 100,000 CA residents in 2001 to 30.5 cases per 100,000 CA residents in 2009; children aged 1-4 years: 40.0 cases per 100,000 CA residents in 2001 to 35.7 cases per 100,000 CA residents in 2009)[7].

  The overall incidence rate of campylobacteriosis in 2010 was slightly higher than it has been in the past two years (2010: n=396, rate 48.4 cases per 100,000 residents, 95% CI: 43.8-53.4; 2009: n=331, rate = 40.7 cases per 100,000 residents, 95% CI: 36.4-45.3; 2008: n=375, rate=46.3 cases per 100,000 residents, 95% CI: 41.7-51.2), but this increase was not statistically significant. A rate increase approached statistical significance in the 25-34 years old age group (2010: 77.2 cases per 100,000 residents, 95% CI 63.2-93.5; 2009: 52.9 cases per 100,000 residents, 95% CI 41.7-66.1); however, when examining historical trends, rates have remained fairly constant in this age group since 2000. Compared to 2009, there was a significant increase in rates among female cases in 2010 (2010: 44.5 cases per 100,000 residents, 95% CI 38.2-51.6; 2009: 32.6 cases per 100,000 residents, 95% CI 27.2-38.7). Historical analysis shows a steady increase in rates among females since 2003, with the 2010 rate being significantly higher than the rate from 2004 (31.4 cases per 100,000 residents, 95% CI: 26.1-37.5).

- *Lyme Disease (LD):* Since 1989, LD has been a clinician-reported disease, and in June 2005, laboratories became legally required to report cases of LD to SFDPH. Laboratory testing for LD has been and continues to be problematic, because some commercial labs use assays whose accuracy and usefulness has not been adequately established[9]. With the implementation of laboratory reporting in 2005, the number of LD cases increased and continued increasing in 2006 (n=14, rate = 1.7 cases per 100,000 residents) and 2007 (n=18, rate=2.2 cases per 100,000 residents). In 2008, SFDPH applied the 2008 Council of State and Territorial Epidemiologists/Centers for Disease Control and Prevention (CDC) LD case definition; subsequently, the number of LD cases decreased (2008: n=7, rate=0.9 cases per 100,000 residents; 2009: n=4, rate=0.5 cases per 100,000 residents). The LD rate increased in 2010 (n=9, rate=1.1 cases per 100,000 residents); however, the rate is unstable due to small numbers and should be interpreted with caution. Five out of the nine cases in 2010 had information on travel history; four

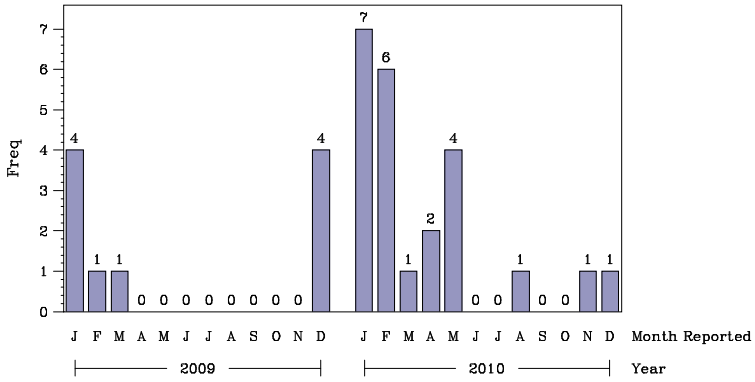
out of five had traveled domestically and three out of these five had tick bite exposures. Of the four cases without travel history information, one had a documented tick bite.

- *Measles*: Measles (also known as rubeola) is a highly contagious vaccine-preventable disease caused by the measles virus. Worldwide, the number of reported cases was 299,201 in 2010[10], but the actual number of cases is estimated to be much greater; in 2005, the number of measles cases worldwide was estimated to be over 20 million[11]. Due to a successful vaccination program, measles is rare in the US. However, since 2008, there has been a significant rise in cases due to importation of disease and subsequent outbreaks in several states, particularly among unvaccinated populations[12]; approximately 95% of cases in the US are internationally imported or U.S-acquired, import-linked cases[13].

  In San Francisco in 2007, no measles cases were reported; one case was reported in 2008 and five cases in 2009, two of which were internationally imported, two were US-acquired, import-linked cases, and one case did not have a known source. One of the 2009 imported cases caused an outbreak, which resulted in two additional cases. One measles case occurred in San Francisco in 2010; it was an US-acquired case without any documented travel history. The case was vaccinated against measles. Measles contact tracing was implemented. No secondary cases resulted from this infection.

- *Outbreaks:* In 2010, CDCU identified and investigated a total of 29 communicable disease outbreaks. This is fewer than the number of outbreaks identified and investigated in previous years (2009: n=32; 2008: n=42; 2007: n=41; 2006: n=65). It is unclear whether this decrease is a result of changes in reporting practices, outbreak definition changes, or a true decrease in the number of outbreaks.
  - Etiology: All 29 reported outbreaks had a suspected or confirmed etiology: 23/29 (79%) were caused by norovirus alone, two by bacterial toxins (e.g. *Bacillus cereus* or *Clostridium perfringens*), one by norovirus and *Clostridium difficile*, and one each by suspected varicella, confirmed scabies and confirmed pertussis.
  - Gastrointestinal Illness Outbreaks: Twenty-six of the 29 (90%) outbreaks caused gastrointestinal illness.
    - Three of the 26 gastrointestinal outbreaks (12%) were believed to be foodborne; one was suspected to be caused by norovirus and the other two by bacterial toxins.
    - Twenty-three of the 26 outbreaks (88%) were believed to be non-foodborne-related acute gastroenteritis outbreaks, all of which were outbreaks of confirmed or suspected norovirus. Non-foodborne outbreaks of norovirus occurred mainly in the first half of the year (Figure 1) and resulted in an average of 21 illnesses per incident. Seventeen of the 23 outbreaks (74%) occurred in long term care facilities for the elderly, three (13%) in schools, two (9%) in hospitals and one (4%) in a group home. While there were more non-foodborne-related norovirus outbreaks in 2010 than in 2009, the volume and distribution of the 2010 outbreaks are similar to those identified in 2008.

Figure 1. Monthly Incidence of Non−Foodborne Norovirus Outbreaks in San Francisco, 2009−2010



Note: Includes both suspected and confirmed norovirus outbreaks.

- *Pertussis:* In San Francisco, as in California[14] and the United States[15], pertussis is endemic with epidemic cycles every three to four years. In San Francisco, the incidence of pertussis in 2010 increased almost seven-fold compared to 2009 (2010: 17.0 cases per 100,000 residents, 95% CI 14.3-20.1; 2009: 2.5 cases per 100,000 residents, 95% CI 1.5-3.8); this dramatic increase was also observed throughout California (2010: 23.3 cases per 100,000 residents[16]; 2009: 1.35 cases per 100,000 residents[17]).

  No pertussis deaths occurred in San Francisco in 2010. The highest rates were observed among infants less than 1 year of age, followed by those ages 5-14 (78.1 cases per 100,000 residents, 95% CI 57.8-103.0). When examined by race/ethnicity groups, the highest rates were observed among Hispanic residents (33.6 cases per 100,000 residents, 95% CI 23.7-46.3), with the greatest proportion of Hispanic cases occurring in infants younger than one year of age (24%, compared to 2% for White and 13% for Asian/Pacific Islander residents in the same age group). This trend was also observed throughout California, where the rate among Hispanics were higher than other race/ethnicity groups at 26.5 cases per 100,000 residents, with the highest rate occurring in Hispanic infants less than six months in age (574.9 cases per 100,000 residents)[16].

  Pertussis has been increasing in San Francisco, California, and the United States since the mid 1970's, especially among adolescents and adults. Theories for this trend include increased recognition and diagnosis, increased access to laboratory tests, introduction of new laboratory tests such as nucleic acid amplification tests, increased surveillance and reporting, and waning immunity following vaccination[14,15,18]. The sharp rise in the number of cases in 2010 prompted the California Department of Public Health to officially declare the presence of a pertussis epidemic in California in June 2010. Both California and San Francisco undertook response activities such as disseminating health alerts and educational materials to providers and the public informing them of the epidemic; encouraging diagnosis and reporting of cases to health authorities; promoting vaccination, especially in high-risk individuals in frequent contact with infants such as new parents, household members, healthcare workers and daycare providers; and encouraging provision of post-exposure prophylaxis to close contacts of cases[19,20]. In September 2010, the California legislature passed AB 354 which required all students entering 7th through 12th grade for the 2011-2012 school year to be immunized against pertussis with a Tdap booster. Even though the law took effect in July 2011, many public health agencies, including SFDPH, encouraged eligible children to be immunized and held vaccination campaigns before July 2011[21].

- *Rabies, Bat:* Five rabid bats were detected in San Francisco in 2010. 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[22]. Rabies was not detected in any other animals in 2010, 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[22].

- *Salmonellosis*: Rates of salmonellosis have decreased from 30.2 per 100,000 residents (95% CI: 26.4-34.5) in 1992 to a low of 13.2 per 100,000 residents (95% CI: 10.6-16.0) in 2005. Between 2009 and 2010, the rate of salmonellosis increased from 18.4 per 100,000 residents (95% CI: 15.6-21.6) to 20.3 per 100,000 residents (95% CI: 17.3-23.6); though this difference was not statistically significant, a general increase in rates has been observed since 2005 (3 year moving averages: 2005-2007: 86.1 cases per 100,000 residents; 2006-2008: 87.7 cases per 100,000 residents; 2007-2009: 100.6 cases per 100,000 residents; 2008-2010: 112.8 cases per 100,000 residents).

  The most frequently reported *Salmonella* serotypes in 2010, which together accounted for 78.9% of the 166 cases with complete serotype information were as follows: *S. enteriditis* (45.2%), *S. typhimurium* (8.4%), *S. infantis* (4.8%), *S. adelaide* (4.2%), *S. heidelberg* (4.2%), *S. newport* (4.2%), S. I 4,5,12:i:- (3.0%), *S. braenderup* (2.4%), *S. montevideo* (2.4%). There was a much larger proportion of *S. enteriditis* cases in 2010 compared to 2009 (20.7%). A similar increase in the number of *S. enteriditis* cases in 2010 occurred throughout California, especially between the months of April and July[23,24]; 51/75 (68%) of all 2010 *S. enteriditis* cases in San Francisco occurred during the same time period, 28 of which had the same PFGE pattern as cases that were part of the statewide increase. No single cause for the statewide increase of *S. enteriditis* was identified. While most San Francisco cases of salmonellosis were sporadic, some cases were associated with multistate outbreaks, including an outbreak of *S. paratyphi* B associated with raw tuna and an outbreak of *S. newport* associated with alfalfa sprouts.

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TABLE 1: Frequency of Reportable Diseases in San Francisco, 2010

Disease	n	Rate
Amebiasis	102	12.5
Anthrax	0	0.0
Babesiosis	1	0.1 *
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	396	48.4
Chickenpox, Severe (Death or Hosp) (2)	1	0.1 *
Cholera (3)	0	0.0
Ciguatera Fish Poisoning	0	0.0
Coccidioidomycosis	4	0.5 *
Colorado Tick Fever	0	0.0
Creutzfeldt-Jakob Dis. or Other TSE (4,5)	1	0.1 *
Cryptosporidiosis	15	1.8 *
Cysticercosis or Taeniasis (6)	3	0.4 *
Dengue	3	0.4 *
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	9	1.1 *
Anaplasmosis/Ehrlichiosis	0	0.0
Encephalitis, Total	10	1.2 *
Giardiasis	173	21.1
Haemophilus influenzae, Invasive (8)	0	0.0
Hantavirus Infection	0	0.0
Hemolytic Uremic Syndrome	0	0.0
Hepatitis A	5	0.6 *
Hepatitis B, Acute (9)	12	1.5 *
Hepatitis C, Acute	0	0.0
Hepatitis Delta	2	0.2 *
Influenza A, Avian (H5N1) (Human) (4)	0	0.0
Influenza, Pediatric Deaths (4,10)	0	0.0
Kawasaki Syndrome	0	0.0
Legionellosis	2	0.2 *
Leprosy	0	0.0
Leptospirosis	0	0.0
Listeriosis	2	0.2 *
Lyme Disease (11)	9	1.1 *
Malaria	3	0.4 *
Measles	1	0.1 *
Meningitis, Bacterial (12)	4	0.5 *

Disease	n	Rate
Meningitis, Fungal	2	0.2 *
Meningitis, Parasitic	0	0.0
Meningitis, Total	11	1.3 *
Meningitis, Unspecified	2	0.2 *
Meningitis, Viral	3	0.4 *
Meningococcal Infection (13)	1	0.1 *
Mumps	0	0.0
Outbreaks, Foodborne (14)	3	N/A
Outbreaks, Non-Foodborne (14)	26	N/A
Paralytic Shellfish Poisoning	0	0.0
Pertussis	139	17.0
Plague	0	0.0
Poliovirus Infection (23)	0	0.0
Psittacosis	0	0.0
Q Fever	0	0.0
Rabies, Animal (15)	5	N/A
Rabies, Human	0	0.0
Relapsing Fever	0	0.0
Rheumatic Fever, Acute	0	0.0
Rocky Mountain Spotted Fever	0	0.0
Rubella	1	0.1 *
Rubella, Congenital (1)	0	0.0
STEC including E. coli O157:H7 (7,22)	8	1.0 *
Salmonellosis (16)	166	20.3
Scombroid Fish Poisoning	0	0.0
Severe Acute Respiratory Syndrome	0	0.0
Severe Staph. aureus infection (17)	21	2.6
Shiga toxin feces (7)	0	0.0
Shigellosis, Group B: S. flexneri	34	4.2
Shigellosis, Group D: S. sonnei	71	8.7
Shigellosis, Other Group	0	0.0
Shigellosis, Total	105	12.8
Smallpox (18)	0	0.0
Streptococcal Infection (19)	0	0.0
Tetanus	0	0.0
Toxic Shock Syndrome	0	0.0
Trichinosis	0	0.0
Tularemia	1	0.1 *
Typhoid Carrier (20)	0	0.0
Typhoid Fever, Acute (20)	3	0.4 *
Typhus Fever	0	0.0
Vibriosis, Non-Cholera (3)	18	2.2 *
Viral Hemorrhagic Fever (21)	0	0.0
West Nile Disease	1	0.1 *
Yellow Fever	0	0.0
Yersiniosis	2	0.2 *

*Source: SFDPH Communicable Disease Control Unit. Data shown by year cases reported to SFDPH. Rates are cases per 100,000 population. *=Unstable Rates (where n<20) should not be compared statistically. Population estimates from the California Department of Finance. This report uses 2007 estimates for the 2010 San Francisco population. (1) Rate among residents age <1 yr. (2) Since June 2007, only chickenpox (not varicella) deaths reportable; chickenpox hospitalizations became reportable in June 2007. For year 2010, both cases were hospitalizations (3) Cholera caused by Vibrio cholerae serogroup O1/O139. Vibriosis caused by other V. cholerae serogroups (non-O1/O139) and other Vibrio spp. (4) Reportable since June 2007. (5) TSE = transmissible spongiform encephalopathies (e.g., vCJD, kuru). (6) Taeniasis reportable since June 2007. (7) Non-O157:H7 STEC infections and Shiga toxin feces reportable since Oct 2006. (8) Reportable in <15 yrs; rate for residents aged <15 yrs. (9) Includes perinatal cases. (10) Reportable among <18 yrs; rate for residents <18 yrs. (11) Lyme Disease has been clinician-reportable since 1989 and lab-reportable since June 2005; in January 2008. (12) Excludes meningitis caused by Neisseria meningitidis, which is listed separately as Meningococcal Infections. (13) Caused by Neisseria meningitidis and includes meningitis and meningococcemia. (14) Foodborne OB is >=4 illnesses with common exposure; other OBs defined by increase in cases above expected number. (15) Rabid bat only; no documented rabid terrestrial animal in SF for >60 yrs. (16) Excludes S. Typhi, which causes typhoid fever. (17) Reportable since February 2008. (18) Eradicated in 1979; reportable again since 2001 for bioterror surveillance. (19) Individual foodhandlers and dairy workers only. (20) Caused by S. Typhi. (21) Includes filoviruses (e.g., Ebola, Marburg), arenaviruses (e.g., Lassa fever), bunyaviruses (e.g., Crimean-Congo), and flaviruses (e.g., Omsk). (22) Reportable since Dec 2009. (23) Changed from Poliomyelitis infection as of Dec 2009.*

TABLE 2: Frequency and Unadjusted Rates for 7 Selected Diseases by Age, San Francisco, 2010

		Amebiasis				Campylobacteriosis				Cryptosporidiosis			
Year	Age	n	Rate	95%LCL	95%UCL	n	Rate	95%LCL	95%UCL	n	Rate	95%LCL	95%UCL
2010	<1 yr	0	0.0*			6	68.9*	25.3	150.0	0	0.0*		
	1-4 yrs	2	5.8*	0.7	20.9	27	77.9	51.4	113.4	0	0.0*		
	5-14 yrs	5	8.0*	2.6	18.6	30	47.8	32.3	68.3	0	0.0*		
	15-24 yrs	5	8.8*	2.8	20.5	34	59.6	41.3	83.3	1	1.8*	0.0	9.8
	25-34 yrs	19	14.0*	8.4	21.8	105	77.2	63.2	93.5	6	4.4*	1.6	9.6
	35-44 yrs	34	17.2	11.9	24.1	53	26.8	20.1	35.1	4	2.0*	0.6	5.2
	45-54 yrs	25	22.3	14.4	32.9	44	39.2	28.5	52.7	3	2.7*	0.6	7.8
	55-64 yrs	8	8.5*	3.7	16.8	54	57.6	43.3	75.2	1	1.1*	0.0	5.9
	65+ yrs	4	3.5*	0.9	8.9	37	32.0	22.5	44.1	0	0.0*		
	Total	102	12.5	10.2	15.1	396	48.4	43.8	53.4	15	1.8*	1.0	3.0

		Giardiasis				Pertussis				Salmonellosis			
Year	Age	n	Rate	95%LCL	95%UCL	n	Rate	95%LCL	95%UCL	n	Rate	95%LCL	95%UCL
2010	<1 yr	1	11.5*	0.3	64.0	12	137.9*	71.2	240.8	10	114.9*	55.1	211.3
	1-4 yrs	13	37.5*	20.0	64.2	11	31.7*	15.8	56.8	23	66.4	42.1	99.6
	5-14 yrs	10	15.9*	7.6	29.3	49	78.1	57.8	103.3	28	44.6	29.7	64.5
	15-24 yrs	13	22.8*	12.1	39.0	9	15.8*	7.2	30.0	11	19.3*	9.6	34.5
	25-34 yrs	25	18.4	11.9	27.1	17	12.5*	7.3	20.0	32	23.5	16.1	33.2
	35-44 yrs	47	23.8	17.5	31.6	16	8.1*	4.6	13.2	17	8.6*	5.0	13.8
	45-54 yrs	42	37.4	27.0	50.6	12	10.7*	5.5	18.7	19	16.9*	10.2	26.5
	55-64 yrs	17	18.1*	10.6	29.0	8	8.5*	3.7	16.8	9	9.6*	4.4	18.2
	65+ yrs	5	4.3*	1.4	10.1	5	4.3*	1.4	10.1	17	14.7*	8.6	23.5
	Total	173	21.1	18.1	24.5	139	17.0	14.3	20.1	166	20.3	17.3	23.6

		Shigellosis (Total)				Shigellosis (flexneri)				Shigellosis (sonnei)			
Year	Age	n	Rate	95%LCL	95%UCL	n	Rate	95%LCL	95%UCL	n	Rate	95%LCL	95%UCL
2010	<1 yr	0	0.0*			0	0.0*			0	0.0*		
	1-4 yrs	1	2.9*	0.1	16.1	0	0.0*			1	2.9*	0.1	16.1
	5-14 yrs	2	3.2*	0.4	11.5	1	1.6*	0.0	8.9	1	1.6*	0.0	8.9
	15-24 yrs	7	12.3*	4.9	25.3	0	0.0*			7	12.3*	4.9	25.3
	25-34 yrs	20	14.7	9.0	22.7	8	5.9*	2.5	11.6	12	8.8*	4.6	15.4
	35-44 yrs	36	18.2	12.8	25.2	14	7.1*	3.9	11.9	22	11.1	7.0	16.9
	45-54 yrs	26	23.2	15.1	34.0	6	5.3*	2.0	11.6	20	17.8	10.9	27.5
	55-64 yrs	9	9.6*	4.4	18.2	2	2.1*	0.3	7.7	7	7.5*	3.0	15.4
	65+ yrs	4	3.5*	0.9	8.9	3	2.6*	0.5	7.6	1	0.9*	0.0	4.8
	Total	105	12.8	10.5	15.5	34	4.2	2.9	5.8	71	8.7	6.8	10.9

Source: SFDPH Communicable Disease Control Unit. Data shown by year cases reported to SFDPH. Rates are cases per 100,000 population.
=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.
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.
Population estimates obtained from the California Department of Finance. This report uses 2007 estimates for the 2010 San Francisco population.

TABLE 3: Frequency and Unadjusted Rates for 7 Selected Diseases by Sex, San Francisco, 2010

		Amebiasis				Campylobacteriosis				Cryptosporidiosis			
Year	Sex	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL
2010	Male	90	21.4	17.2	26.3	214	50.9	44.3	58.2	13	3.1*	1.6	5.3
	Female	12	3.0*	1.6	5.3	177	44.5	38.2	51.6	2	0.5*	0.1	1.8
	Unk	0				5				0			
	Total	102	12.5	10.2	15.1	396	48.4	43.8	53.4	15	1.8*	1.0	3.0

		Giardiasis				Pertussis				Salmonellosis			
Year	Sex	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL
2010	Male	140	33.3	28.0	39.3	70	16.6	13.0	21.0	85	20.2	16.1	25.0
	Female	29	7.3	4.9	10.5	69	17.4	13.5	22.0	81	20.4	16.2	25.3
	Unk	4				0				0			
	Total	173	21.1	18.1	24.5	139	17.0	14.3	20.1	166	20.3	17.3	23.6

		Shigellosis (Total)				Shigellosis (flexneri)				Shigellosis (sonnei)			
Year	Sex	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL
2010	Male	88	20.9	16.8	25.8	29	6.9	4.6	9.9	59	14.0	10.7	18.1
	Female	16	4.0*	2.3	6.5	5	1.3*	0.4	2.9	11	2.8*	1.4	5.0
	Unk	1				0				1			
	Total	105	12.8	10.5	15.5	34	4.2	2.9	5.8	71	8.7	6.8	10.9

Source: SFDPH Communicable Disease Control Unit. Data shown by year cases reported to SFDPH.
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%LCL=Exact Lower Confidence Limit, 95%UCL=Exact Upper Confidence Limit; 95% Exact Confidence Limits not displayed for counts of zero.
Population estimates obtained from the California Department of Finance. This report uses 2007 estimates for the 2010 San Francisco population.

TABLE 4: Frequency and Unadjusted Rates for 7 Selected Diseases by Race/Ethnicity, San Francisco, 2010

		Amebiasis				Campylobacteriosis**				Cryptosporidiosis***			
Year	Race/ Ethnicity	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL
2010	White	58	15.6	11.9	20.2	52				7			
	Black	0	0.0*			4				0			
	Asian/PI	4	1.5*	0.4	3.8	17				0			
	Hispanic	26	23.6	15.4	34.6	8				1			
	Am Indian	0				0				0			
	Other	1				1				0			
	Unknown	13				314				7			
	Total	102	12.5	10.2	15.1	396				15			

		Giardiasis**				Pertussis				Salmonellosis			
Year	Race/ Ethnicity	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL
2010	White	37				56	15.1	11.4	19.6	56	15.1	11.4	19.6
	Black	6				6	10.3*	3.8	22.4	8	13.7*	5.9	27.0
	Asian/PI	3				15	5.5*	3.1	9.1	52	19.2	14.3	25.1
	Hispanic	13				37	33.6	23.7	46.3	14	12.7*	7.0	21.3
	Am Indian	0				0				0			
	Other	3				4				1			
	Unknown	111				21				35			
	Total	173				139	17.0	14.3	20.1	166	20.3	17.3	23.6

		Shigellosis (Total)				Shigellosis (flexneri)				Shigellosis (sonnei)			
Year	Race/ Ethnicity	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL	n	Rate	95% LCL	95% UCL
2010	White	57	15.4	11.6	19.9	21	5.7	3.5	8.7	36	9.7	6.8	13.4
	Black	7	12.0*	4.8	24.7	2	3.4*	0.4	12.4	5	8.6*	2.8	20.0
	Asian/PI	1	0.4*	0.0	2.1	1	0.4*	0.0	2.1	0	0.0*		
	Hispanic	12	10.9*	5.6	19.0	4	3.6*	1.0	9.3	8	7.3*	3.1	14.3
	Am Indian	0				0				0			
	Other	1				0				1			
	Unknown	27				6				21			
	Total	105	12.8	10.5	15.5	34	4.2	2.9	5.8	71	8.7	6.8	10.9

Source: SFDPH Communicable Disease Control Unit. Data shown by year cases reported to SFDPH. Am Indian = American Indian or Alaska Native; Asian/PI = Asian or Pacific Islander
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.
****Rates were not calculated for Campylobacteriosis and Giardiasis, because of the high percentage of missing race and ethnicity information.***
*****Rates were not calculated for Cryptosporidiosis according to CDCU rules for data suppression (N=15).***
Population estimates obtained from the California Department of Finance. This report uses 2007 estimates of the 2010 population.

TABLE 5: San Francisco Population Estimates by Sex, Age and Race/Ethnicity, 2010

Year	Sex	Age	White	Hispanic	Black	Asian/PI	Am Indian	Total
2010	F	<1 yr	1,978	673	308	1,279	30	4,268
		1-4 yrs	7,375	2,901	1,244	5,355	124	16,999
		5-14 yrs	7,067	7,469	3,240	12,202	737	30,715
		15-24 yrs	5,717	5,340	3,775	13,158	379	28,369
		25-34 yrs	38,542	6,738	3,756	18,011	444	67,491
		35-44 yrs	50,472	9,580	3,961	24,215	617	88,845
		45-54 yrs	16,514	7,066	4,258	20,808	489	49,135
		55-64 yrs	18,004	5,092	3,742	19,109	355	46,302
		65+ yrs	24,502	6,940	4,999	28,615	378	65,434
			170,171	***51,799***	***29,283***	***142,752***	***3,553***	***397,558***
	M	<1 yr	2,054	700	321	1,328	31	4,434
		1-4 yrs	7,663	3,017	1,306	5,537	128	17,651
		5-14 yrs	7,453	7,842	3,397	12,555	760	32,007
		15-24 yrs	5,476	5,423	3,693	13,722	356	28,670
		25-34 yrs	39,034	8,452	3,350	17,212	427	68,475
		35-44 yrs	67,929	13,615	4,221	22,186	744	108,695
		45-54 yrs	28,866	9,349	5,042	19,089	677	63,023
		55-64 yrs	21,211	5,332	4,131	16,315	429	47,418
		65+ yrs	21,183	4,543	3,621	20,525	359	50,231
			200,869	***58,273***	***29,082***	***128,469***	***3,911***	***420,604***
2010			***371,040***	***110,072***	***58,365***	***271,221***	***7,464***	***818,162***

Source: California Department of Finance, Demographic Research Unit. This report uses estimates made in 2007 for the 2010 San Francisco population.
Note: Am Indian=American Indian/Alaska Native; Asian/PI=Asian/Pacific Islander.

Appendix: Notifiable Disease - Historical Changes (2004 - 2009)

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 – 2009 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**	Include 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.

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.
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 flaviruses (e.g., Omsk). Yellow fever and dengue are listed separately and not included in this category.

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