



The Bay Area Cryptosporidiosis Surveillance Project

Annual Report

2006



The Bay Area Cryptosporidiosis Surveillance Project (CSP), operating since June 1996, is a joint project between the San Francisco Public Utilities Commission (SFPUC) and Bay Area health departments. In 1989, the Environmental Protection Agency promulgated the Surface Water Treatment Rule mandating all drinking water systems supplied by surface water sources to add filtration to their water processing or to demonstrate the ability to provide high quality drinking water without filtration. At this time, the SFPUC is one of only a handful of large water systems that have water of sufficiently high quality that filtration is not necessary. In lieu of filtration, water utilities must continuously demonstrate their water to be of the highest standards, maintain source water protection programs and monitor for waterborne illness among their customers. The Bay Area Cryptosporidiosis Surveillance Project is a vital part of the SFPUC's water filtration avoidance agreement with the EPA.

At its inception in 1996, CSP, managed by the California Emerging Infections Program, monitored cryptosporidiosis incidence in eight Bay Area counties: Alameda, Contra Costa, San Francisco, Marin, San Mateo, Santa Clara, Solano, and Sonoma. Tuolumne County was added to the surveillance system in June 1999. In 2002, surveillance in Marin, Solano, and Sonoma counties was discontinued. Since January 2004, the San Francisco Department of Public Health has been coordinating cryptosporidiosis surveillance for the five counties served by the SFPUC: Alameda, San Francisco, San Mateo, Santa Clara, and Tuolumne County, where the Hetch Hetchy reservoir, which provides 85% of SFPUC's source water, is located.

2006 Surveillance Summary: In 2006, no outbreaks of cryptosporidiosis attributable to drinking water were detected in the SFPUC service area. However, in August, CSP detected a non-drinking water associated cryptosporidiosis outbreak predominately affecting Santa Clara County. CSP collaborated with the Santa Clara County Public Health Department (SCCPHD) in the outbreak investigation.

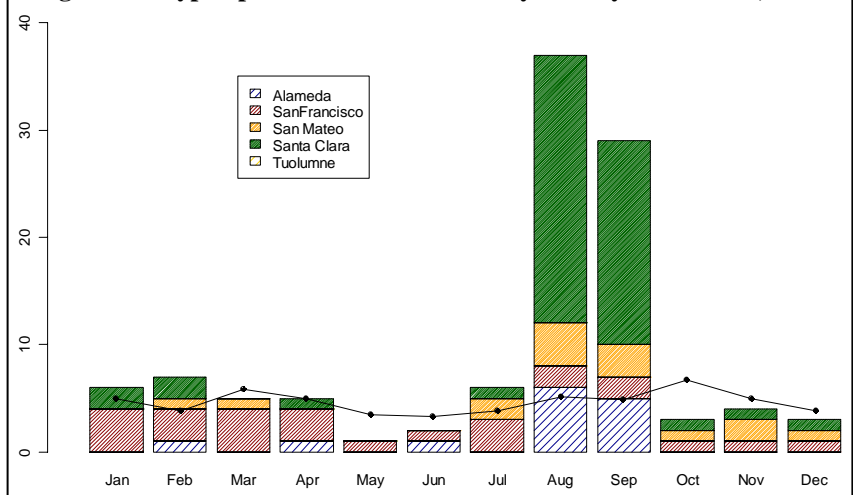
Cryptosporidiosis Outbreak Summary: Of the 108 cases reported to CSP in 2006, 69 were reported between August 11th and October 9th. Table 1 presents data for the outbreak cases. The majority of cases, 45, were residents of Santa Clara County. No cases resided in Tuolumne County. Almost 60% of outbreak cases were under 15 years of age. Sixteen of the 65 interviewed cases attended one interactive water fountain. Based on physical inspection, the fountain was closed by Santa Clara County Department of Environmental Health on August 25, 2006. Subsequent water testing at the interactive fountain by the Santa Clara Valley Water District revealed *Cryptosporidium* oocysts in the re-circulating water. As most cases did not report direct contact with the fountain, additional measures were taken to minimize spread within the community; SCCPHD sent out physician alerts and restricted school attendance by sick children.

Table 1: Cryptosporidiosis Outbreak Case Characteristics

| Cases | N | % Male | Age | |
|---------------|-----------|-----------|-----------|--------------|
| | | | Median | min,max |
| Santa Clara | 45 | 58 | 7 | 0, 57 |
| Alameda | 11 | 55 | 11 | 1, 88 |
| San Mateo | 8 | 63 | 14 | 1, 47 |
| San Francisco | 5 | 80 | 49 | 33, 66 |
| Total | 69 | 59 | 11 | 0, 88 |

All cases: Overall, the number of cases reported each month in 2006, except August and September, did not surpass what is expected given the low endemicity of cryptosporidiosis in the Bay Area. Figure 1 displays case counts by month and county. In 2006, males continued to constitute the majority of cases in Alameda and San Francisco Counties, although by a reduced margin compared to previous years. In San Mateo and Santa Clara Counties, an increased proportion of cases were male as compared to 2005. Due to the outbreak in August and September, one -year cumulative incidences for all counties except San Francisco, which consistently experiences the highest one-year cumulative incidence, were elevated in 2006. Table 2 presents data for all cases reported in 2006. Except for San Francisco County, close to 50 percent of cases in each county occurred among children under 15 years of age. Figure 2 shows case counts by county, age and sex. Cumulative incidences by county and age also reflect increased cases among younger residents in Alameda, Santa Clara and San Mateo Counties. Most notably, children under five years of age in Santa Clara and San Mateo Counties had one-year cumulative incidences of 13.39 and 11.05 cases per 100,000 residents, respectively. In 2005, the one-year cumulative incidences for children under five years of age in Santa Clara and San

Figure 1: Cryptosporidiosis Case Counts by County and Month, 2006



Line represents monthly average case counts 2000-2005. †

Table 2: Number, Gender and Cumulative Incidence of Cryptosporidiosis Cases by County, January-December 2006

| County | N | % male | Incidence per 100,000 |
|---------------|------------|-----------|-----------------------|
| Alameda | 14 | 57 | 0.93 |
| San Francisco | 26 | 81 | 3.26 |
| San Mateo | 15 | 60 | 2.07 |
| Santa Clara | 53 | 55 | 2.99 |
| Tuolumne | 0 | NA | NA |
| Total | 108 | 62 | 2.22 |

Mateo counties were 0.84 and 4.42 cases per 100,000. Table 3 presents cumulative incidences by county and age.

After a rapid decline in the late 1990s, the one-year cumulative incidence of cryptosporidiosis for all SFPUC service area counties combined has been relatively stable. Figure 3 displays cryptosporidiosis case counts by year and county for 1996 through 2006. This decline in the five-county annual cumulative incidence was most marked between 1999 and 2000, and is due largely to a reduction in cases in San Francisco County. The increases in the five-county annual case total and cumulative incidence to 1990s levels seen in 2006 is due entirely to the August, Santa Clara County outbreak. In 2006, the one-year, five county cumulative incidence of cryptosporidiosis was 2.22 cases per 100,000 residents.

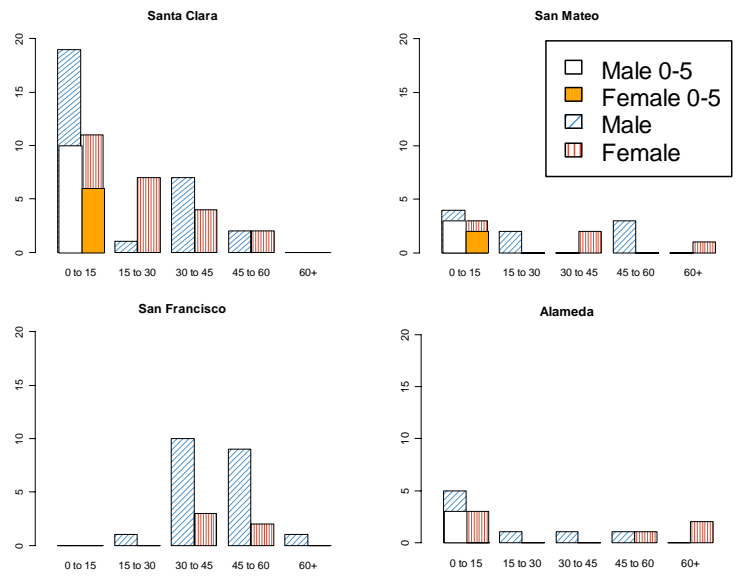
Next Steps: In 2006, CSP held two practice activities designed to improve our emergency preparedness. In 2007, we will be revising our written emergency protocols based on the lessons learned during those activities.

Special Thanks: The Cryptosporidiosis Surveillance Project would not be possible without the cooperation of the various diagnostic laboratories, the California Emerging Infections Program, San Mateo County Public Health Department, Santa Clara County Public Health Department, City and County of San Francisco Department of Public Health, Tuolumne County Public Health Department and the San Francisco Public Utilities Commission.

† Alameda and San Francisco county data and historical data were obtained through the cooperation of the California Emerging Infections Program.

‡ Incidence rates were calculated using the following population estimates: 1996-1999 population data: State of California, Department of Finance, Revised Historical City, County and State Population Estimates, 1991-2000, with 1990 and 2000 Census Counts. Sacramento, California, March 2002. 2000-2004 population data: State of California, Department of Finance, County Population Estimates and Components of Change by County, July 1, 2000-2004. Sacramento, California, February 2005. 2005 population data: State of California, Department of Finance, E-1 City / County Population Estimates, with Annual percent Change, January 1, 2004 and 2005. Sacramento, California, May 2005. 2006 population data: State of California, Department of Finance, E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change — January 1, 2005 and 2006. Sacramento, California, May 2006

Figure 2: Case Counts by County, Age and Sex



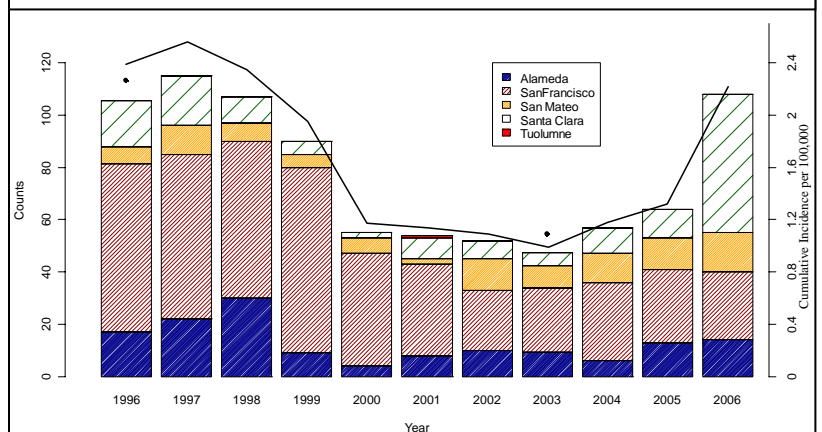
Cases among children under five years of age are highlighted.

Table 3: 2006 Cryptosporidiosis Cumulative Incidence by County and Age

| County | under 5 | 5 to 17 | 18 to 64 | 65+ |
|---------------|---------|---------|----------|------|
| Alameda | 3.06 | 2.35 | 0.42 | 0.68 |
| San Francisco | NA | NA | 4.48 | 0.94 |
| San Mateo | 11.05 | 2.57 | 1.31 | 1.13 |
| Santa Clara | 13.39 | 4.07 | 2.08 | NA |

Incidence rates were calculated using population estimates from: U.S. Census Bureau, Census 2000 of Population and Housing, Summary File 1. Produced by the State of California Department of Finance Census Data Center.

Figure 3: Cryptosporidiosis Case Counts and Cumulative Incidence 1996-2006



Bars represent case counts per year. Line represents the one-year cumulative incidence of Cryptosporidiosis for all counties combined. ‡

• Figure adjusted for missing data 1996 and 2003.

This report was created in January 2007 by the San Francisco Department of Public Health Environmental Health Section in partnership with the San Francisco Public Utilities Commission. For more information, contact michelle.kirian@sfdph.org, visit the San Francisco Department of Public Health Environmental Health Section website: www.sfdph.org/phes/water, or the Public Utilities Commission website: www.sfwater.org. These data are preliminary and not yet confirmed. They do not suggest a source of infection nor reflect any association with the presence or absence of any potential contaminants in the water supply. This information should be considered privileged. It should not be reproduced or distributed.