Epidemiologic Summary of Campylobacteriosis in California, 2001 - 2008

Key Findings and Public Health Messages

- The California Department of Public Health (CDPH) received reports of 42,135 cases of campylobacteriosis with estimated symptom onset dates from 2001 through 2008. This corresponds to an average annual incidence rate of 14.4 cases per 100,000 Californians.
- Campylobacteriosis annual incidence rates decreased by 13.9 percent from 2001 (16.6 per 100,000) to 2008 (14.3 per 100,000).
- During the surveillance period, 76 (0.2 percent) cases were reported to have died with campylobacteriosis. Case fatality rates were 1.5 times higher in cases ≥ 65 years of age (0.3 percent) compared to cases < 65 years of age (0.2 percent).
- Average annual campylobacteriosis incidence rates during the surveillance period were higher among children under 1 year of age (33.0 per 100,000) and 1 to 4 years of age (34.1 per 100,000). Incidence rates among children under 1 year of age decreased by 37.5 percent from the combined years 2001 and 2002 (43.7 per 100,000) to the combined years 2007 and 2008 (27.3 per 100,000).
- From 2001 through 2008, CDPH received reports of 31 (16 confirmed, 15 suspected) outbreaks of foodborne campylobacteriosis in California involving 1,895 cases. One large outbreak associated with a dairy at a correctional facility involved 52 culture-confirmed cases and 1,592 clinically ill inmates.
- Decreasing contamination of poultry meat and dairy products, and educating consumers may provide the best opportunities for preventing and controlling campylobacteriosis.

Background

Campylobacter is among the most commonly reported enteric bacterial pathogens in the United States (US), causing an estimated 2.4 million infections, 13,000 hospitalizations, and 100 deaths each year[1]. Handling and consuming food contaminated by infected animals, especially poultry, are the leading sources of *Campylobacter* infection. Consuming contaminated water or milk, and exposure to infected animals and their environments can also result in infection. Foodborne outbreaks of *Campylobacter* are relatively uncommon, in part because the organism does not multiply in food products[2]. The national *Healthy People 2010* target objective for campylobacteriosis is no more than 12.3 new cases per 100,000 population.

Acute illness, usually gastroenteritis, occurs after an incubation period of 2 to 5 days, and usually lasts 1 week. Rarely, severe illness and death may occur, usually among the immunocompromised. Approximately one in 1,000 diagnosed *Campylobacter* infections can lead to Guillain-Barré syndrome. The recent emergence of human and animal *Campylobacter* isolates with fluoroquinolone resistance has led to restrictions on the use of some fluoroquinolones in poultry in the US[3].

We describe here the epidemiology of campylobacteriosis in California from 2001 through 2008. Data for 2008 are provisional and may differ from data in future publications. For a complete discussion of the definitions, methods, and limitations associated with this report, please refer to Technical Notes[4].

California reporting requirements and surveillance case definition

California Code of Regulations, Title 17, requires health care providers to report suspected cases of campylobacteriosis to their local health department within one working day of identification or immediately by telephone if an outbreak is suspected. Campylobacteriosis is not included in state regulations requiring notification by laboratories to local health officials.

Local health officers are required by regulation to report to CDPH cases of campylobacteriosis. CDPH officially counted cases that satisfied the Centers for Disease Control and Prevention (CDC) surveillance case definition, including both confirmed and probable classifications. During the surveillance period, CDC defined a confirmed case as one with *Campylobacter*

isolated from a clinical specimen including asymptomatic and extraintestinal infections. A probable case was one with clinically-compatible illness and an established epidemiologic link to a laboratory-confirmed case.

Epidemiology of campylobacteriosis in California

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Average annual campylobacteriosis incidence rates during the surveillance period were higher among children under 1 year of age (33.0 per 100,000) and 1 to 4 years of age (34.1 per 100,000). Incidence rates among children under 1 year of age decreased by 37.5 percent from the combined years 2001 and 2002 (43.7 per 100,000) to the combined years 2007 and 2008 (27.3 per 100,000). In contrast, incidence rates increased by 34.7 percent among persons 75 years of age and older (from 12.1 to 16.3 per 100.000). The ratio of male to female cases was 1.2:1.0. Incidence rates by race/ethnicity were not calculated due to the substantial portion of missing data (40.7 percent). However, campylobacteriosis cases with complete data reported Hispanic ethnicity more frequently than would be expected based on the overall demographic profile of California [Figure 3].

Thirty-five (60.3 percent) of 58 counties reported average annual incidence rates for the surveillance period that were above the *Healthy People 2010* objective. Average annual incidence rates for the surveillance period were 2.0 times higher in Northern California (20.3 per 100,000) than Southern California (10.0 per 100,000). From 2001 to 2008, incidence rates for Southern California decreased by 14.7 percent (from 11.6 to 9.9 per 100,000) and rates for Northern California decreased by 14.8 percent (from 23.0 to 19.6 per 100,000). County-specific incidence rates for each two-year interval of the surveillance period ranged from 0.0 to 49.9 per 100,000 persons [Figure 4].

From 2001 through 2008, CDPH received reports of 31 (16 confirmed, 15 suspected) outbreaks of foodborne campylobacteriosis in California involving

Figure 1. California campylobacteriosis case counts and incidence rates

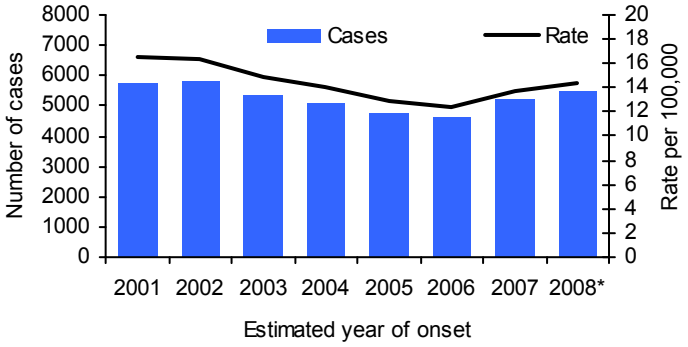


Figure 2. California campylobacteriosis incidence rates by age and time period

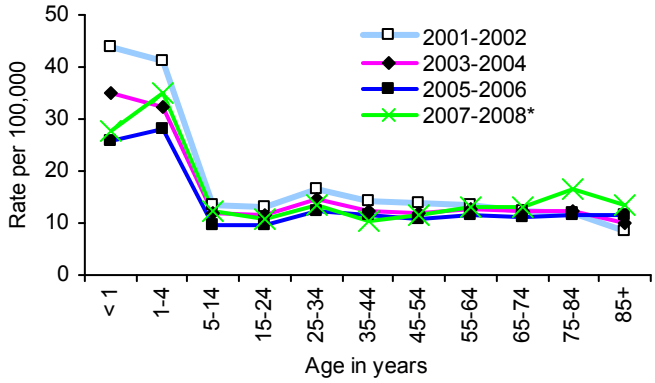
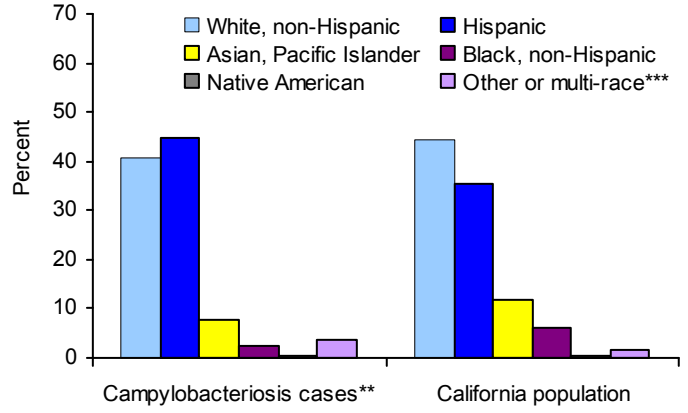


Figure 3. California campylobacteriosis cases and population by race/ethnicity 2001 - 2008*



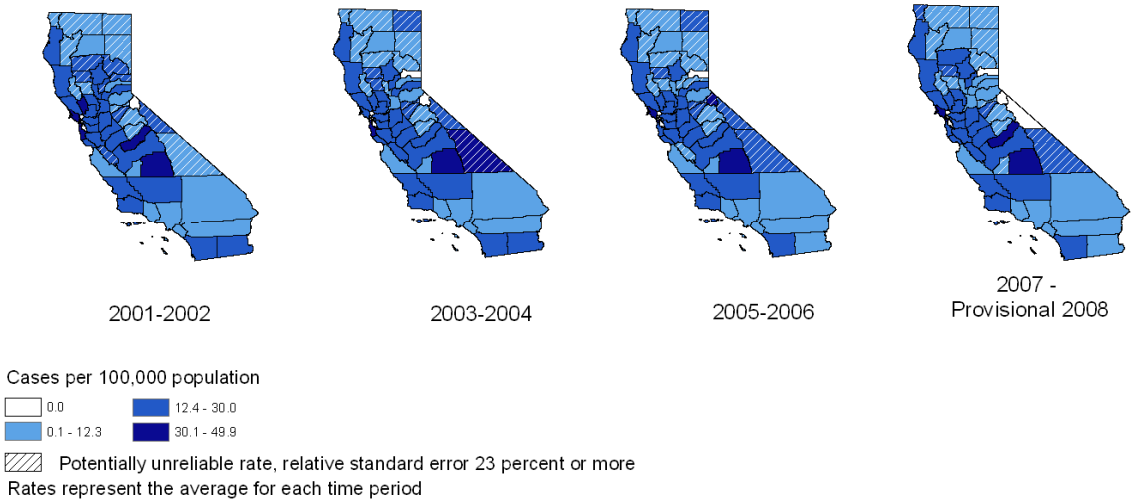
Notes for Figures 1-3

*2008 data are provisional

**Unknowns were excluded

***Includes cases who identified 'other' as their race and Californians ('population') who identified more than one race

Figure 4. California county-specific campylobacteriosis incidence rates



1,895 cases. Of 6 outbreaks with a confirmed vehicle, dairy products (3), poultry (2), and vegetables (2) were implicated. The largest confirmed outbreak occurred in 2006 and was associated with drinking pasteurized milk from a dairy at a correctional facility. It involved 52 culture-confirmed cases and an additional 1,592 clinical infections in inmates. The majority of these clinically ill inmates did not appear to be reported as individual cases in the passive reporting system (and may not have met the surveillance case classification criteria).

Comment

California has experienced a decrease in campylobacteriosis incidence from 2001 to 2006 although the *Healthy People 2010* target (12.3 per 100,000) was not achieved. Recent increases in case rates in 2007 and 2008, especially in the elderly, are difficult to interpret given they occurred over such a brief period of time. Continued monitoring of annual rates is needed.

Decreasing the contamination of poultry meat and dairy products, and consumer education may provide the best opportunities for preventing and controlling campylobacteriosis. The outbreak involving a dairy at a correctional facility underscores the opportunities for large scale outbreaks in these settings.

References and resources

[1]Mead PS, Slutsker L, Dietz V et al. Food-related illness and death in the United States. Emerg Infect Dis 1999;5:607-25. http://www.cdc.gov/ncidod/eid/Vol5no5/pdf/mead.pdf

[2] Gallay A, Bousquet V, Siret V. et al. Risk factors for acquiring sporadic *Campylobacter* infection in France: results from a national case-control study. J Infect Dis 2008;197:1477-1483.

[3]Nelson JM, Chiller TM, Powers JH, Angulo FJ. Fluoroquinolone-resistant *Campylobacter* species and the withdrawal of fluoroquinolones from use in poultry: A public health success story. Clin Infect Dis 2007;44:977-80.

[4]Epidemiologic Summaries of Selected General Communicable Diseases in California, 2001-2008: Technical Notes http://www.cdph.ca.gov/data/statistics/Documents/technicalnotes-episummary-aug2409.pdf

California Department of Public Health campylobacteriosis information web page http://www.cdph.ca.gov/HealthInfo/discond/Pages/Campylobacteriosis.aspx

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