Epidemiologic Summary of Foodborne Botulism in California, 2001 - 2008

Key Findings and Public Health Messages

- The California Department of Public Health (CDPH) received reports of 26 cases of foodborne botulism with estimated onset dates from 2001 through 2008.
- During the surveillance period, 1 (3.9 percent) case was reported to have died with foodborne botulism.
- The ratio of male to female cases was 1.9:1.0.
- From 2001 through 2008, CDPH received reports of 4 outbreaks of foodborne botulism involving 11 cases. The largest outbreak occurred in 2004 and involved 4 male correctional inmates who consumed 'pruno', an alcoholic drink made illicitly in prison.
- Ensuring appropriate practices in food preparation and preservation and educating the public may provide the best opportunities for preventing and controlling foodborne botulism.

Background

Clostridium botulinum neurotoxin is a rare but important food intoxicant in the United States (US). This potent toxin is produced by *C. botulinum,* an anaerobic, spore-forming bacterium that is ubiquitous in the environment. Foodborne botulism follows ingestion of preformed toxin in foods contaminated by *C. botulimum.* Despite the presence of bacteria and toxin in the stools of infected persons, person-to-person transmission has not been documented. *C. botulimum* toxin is listed among the Centers for Disease Control and Prevention (CDC) category A bioterrorism (BT) agents.

Botulism is a neuroparalytic illness. Neurologic symptoms generally begin 12 to 36 hours after ingestion of toxin. Illness can progress to a symmetric, descending flaccid paralysis that begins in the cranial nerves. Untreated, botulism can progress to respiratory paralysis and death. If administered early in the course of illness, botulism antitoxin can stop the progression of, but cannot reverse paralysis. Antitoxin is available exclusively from public health authorities.

We describe here the epidemiology of foodborne botulism 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[1]. Because of the small numbers of cases, we did not calculate incidence rates.

California reporting requirements and surveillance case definition

California Code of Regulations, Title 17, requires health care providers to report suspected cases of botulism to their local health department immediately by telephone. In the event that a commercial food product is suspected as the source, special instructions will be given by CDPH. Laboratories must immediately communicate by telephone with the CDPH Microbial Diseases Laboratory for instruction whenever a specimen for laboratory diagnosis of suspected botulism is received. Laboratories must report to the local health department when laboratory testing yields evidence suggestive of *C. botulinum;* notification must occur within one hour after the health care provider has been notified.

California regulations require local health departments to report to CDPH cases of foodborne botulism immediately by telephone. CDPH officially counted cases that satisfied the CDC surveillance case definition. CDC defined a confirmed case of foodborne botulism as one with clinically compatible illness and either (i) laboratory confirmation including detection of botulinum toxin in serum, stool, or patient's food or isolation of *C. botulinum* from stool, or (ii) a history of consuming the same food as persons with laboratory-confirmed botulism. A probable case was one with clinically compatible illness and an epidemiologic exposure (e.g., ingestion of a home-canned food within the previous 48 hours). California regulations defined one case of botulism as a foodborne outbreak if laboratory studies identified the causative agent in food.

Epidemiology of foodborne botulism in California

CDPH received reports of 26 cases of foodborne botulism with estimated onset dates from 2001 through 2008. Annual foodborne botulism case counts remained level from 2001 to 2008 [Figure 1]. During the surveillance period, 1 (3.9 percent) case was reported to have died with foodborne botulism.

During the surveillance period, the number of foodborne botulism cases was highest among persons 35 to 44 years of age [Figure 2]. There were no cases in children under 15 years of age. The ratio of male to female cases was 1.9:1.0. Foodborne botulism cases with complete information on race/ethnicity (88.5 percent) reported Asian, Pacific Islander or Black, non-Hispanic race/ethnicities more frequently than would be expected based on the overall demographic profile of California [Figure 3]. Fourteen counties reported at least 1 case during the surveillance period. These counties were distributed throughout the state so that every region of the state reported at least 1 case. Riverside County reported the most cases (5); 4 were associated with an outbreak in a correctional facility described below.

From 2001 through 2008, CDPH received reports of 4 outbreaks of foodborne botulism involving 11 cases. The largest outbreak occurred in 2004 and involved 4 male correctional inmates who consumed 'pruno', an alcoholic drink made illicitly in prison[2]. Although not part of this outbreak, a male inmate in a second facility developed botulism after making and consuming pruno in 2005. All 5 inmates survived. The remaining outbreaks were associated with salmon (2 cases), home-canned carrots (2 cases), and home-fermented tofu (2 cases).

Comment

Although foodborne botulism remained a rare occurrence in California, each case represented a medical and public health emergency. Surveillance and response to foodborne botulism is intensive because the contaminated food item must be identified and removed from distribution (whether it is commercial or homemade) without delay. The outbreak identified in a correctional facility highlights a novel vehicle that can potentially place large numbers of persons at risk for botulism. Ensuring appropriate practices in food preparation and preservation and educating the public may provide the best opportunities for preventing and controlling foodborne botulism.

References and resources

[1]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

[2]Vugia DJ, Mase SR, Cole B, Stile J, Rosenberg J, Velasquez L, Radner A, Inami G. Botulism from drinking pruno. Emerg Infect Dis. 2009;15:69-71.

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Figure 1. California foodborne botulism case counts

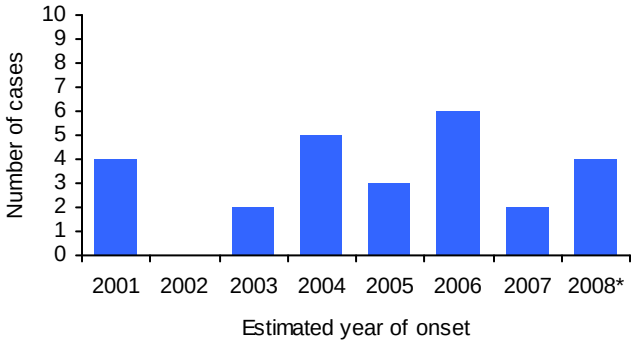


Figure 2. California foodborne botulism cases by age, 2001-2008*

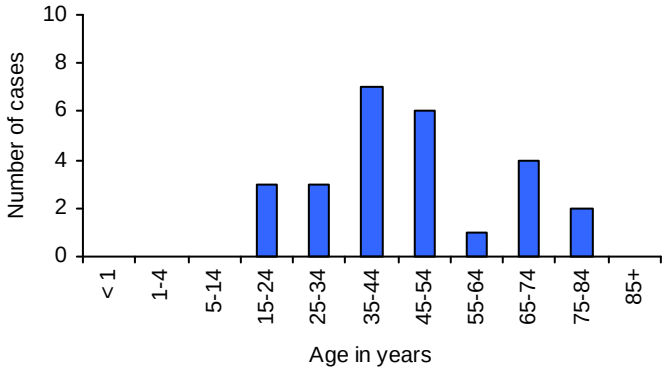
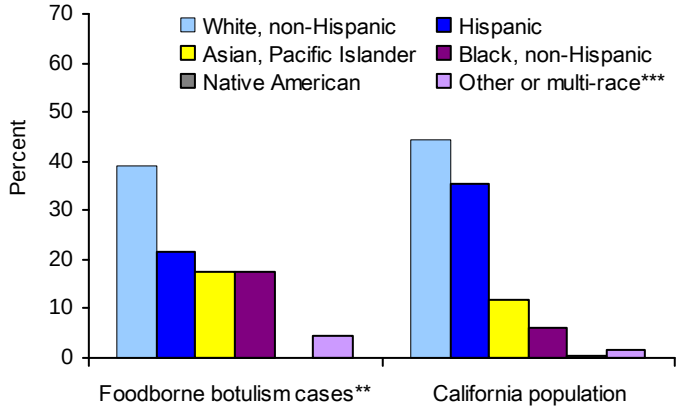


Figure 3. California foodborne botulism cases and population by race/ethnicity, 2001 - 2008*



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