Epidemiologic Summary of Infant Botulism in California, 2001 - 2008

Key Findings and Public Health Messages

- The California Department of Public Health (CDPH) received reports of 276 cases of infant botulism with onset dates from 2001 through 2008. This corresponds to an average incidence rate of 6.3 per 100,000 California resident live births.

- Infant botulism incidence rates steadily increased from the lowest of 4.0 per 100,000 live births in 2002 to the highest of 7.7 per 100,000 live births in 2005. Incidence rates decreased thereafter (to 6.4 per 100,000 live births in 2007 and 6.3 per 100,000 live births in 2008).

- Infant botulism cases with complete information on race/ethnicity were reported to be White non-Hispanic (49.6 percent) more frequently than would be expected based on the overall demographic profile of California resident live births (29.3 percent).

- During the surveillance period, just 32 (55.2 percent) of 58 counties reported at least 1 case.

- Honey is the only known avoidable source of *C. botulism* spores. Children less than 12 months of age should not be fed any foods containing honey.

Background

Infant botulism is a rare but serious paralytic illness in infants that results when swallowed spores of the causative bacterium *Clostridium botulinum* activate in the large intestine. These bacteria are commonly found in soil and dust and form spores allowing them to survive in dormant state. Ingested spores germinate, grow and release botulinum toxin in the gut. The illness is characterized by constipation, poor feeding, difficulty swallowing, lethargy, expressionless face, loss of head control and may be followed by progressive weakness, impaired respiration, and death. The case fatality rate among hospitalized infant botulism cases is less than 1 percent; however it is higher in areas of the world without access to hospitals with pediatric intensive care units.

Infant botulism occurs after the swallowing of food or dust that contains botulinum spores.

Honey can contain spores of *C. botulinum* and has been a source of infection for infants. Hence, infants under 1 year of age should not be fed honey.

We describe here the epidemiology of infant botulism in California from 2001 through 2008. For a complete discussion of the definitions, methods, and limitations associated with this report, please refer to Technical Notes[1].

California reporting requirements and surveillance case definition

California Code of Regulations, Title 17, requires health care providers to report suspected cases of botulism, including infant botulism, to their local health department immediately by telephone. Infant botulism is included in the state regulations requiring telephone notification within one hour, followed by a written electronic facsimile transmission or electronic mail within one working day, by laboratories to local health officials.

Local health officers are required by regulation to report cases of infant botulism to CDPH, which tabulated confirmed cases that satisfied the Centers for Disease Control and Prevention (CDC) surveillance case definition. During the surveillance period, CDC defined a confirmed case as an illness of an infant less than 1 year of age, characterized by constipation, poor feeding, and “failure to thrive” that may be followed by progressive weakness, impaired respiration, and death, in which botulinum toxin was identified either in serum or stool, or in which *C. botulinum* was isolated from feces.

Epidemiology of infant botulism in California

CDPH received reports of 276 cases of infant botulism with onset dates from 2001 through 2008. This corresponds to an average incidence of 6.3 per 100,000 California live births. Infant botulism incidence steadily increased from the lowest of 4.0 per 100,000 live births in 2002 to the highest of 7.7 per 100,000 live births in 2005. Incidence decreased to the average

rate in 2007 and 2008 (6.4 and 6.3 per 100,000 live births, respectively) [Figure 1].

The ratio of male to female cases was 0.9:1.0. Infant botulism cases with complete information on race/ ethnicity (>98 percent of all cases) were reported to be White non-Hispanic (49.6 percent) more frequently than would be expected based on the overall demographic profile of California resident live births (29.3 percent).

During the surveillance period, just 32 (55.2 percent) of 58 counties reported at least 1 case. Only rates reported by the counties of Los Angeles (7.3 per 100,000 live births) and San Bernardino (10.8 per 100,000 live births) were statistically reliable [Figure 2].

Comment

During the surveillance period, the highest annual number of infant botulism cases was reported in 2006. Infant botulism cases occurred throughout the state. Honey can contain spores of *C. botulinum* and has been a source of infection for infants. Infants under 1 year of age should not be fed any foods containing honey.

Human Botulism Immune Globulin Intravenous (BabyBIG®), a public service orphan drug created and developed by CDPH 1988-2003, was licensed by the FDA for the treatment of infant botulism in 2003. BabyBIG® is available through the CDPH Infant Botulism Treatment and Prevention program (24/7 telephone 510-231-7600; http://www.infantbotulism.org).

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

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Figure 1. California infant botulism case counts and incidence rates

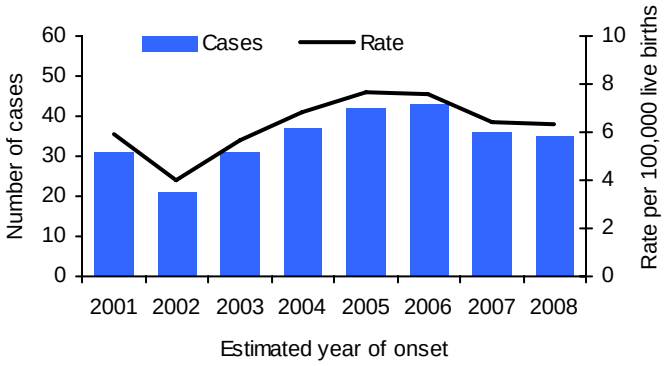
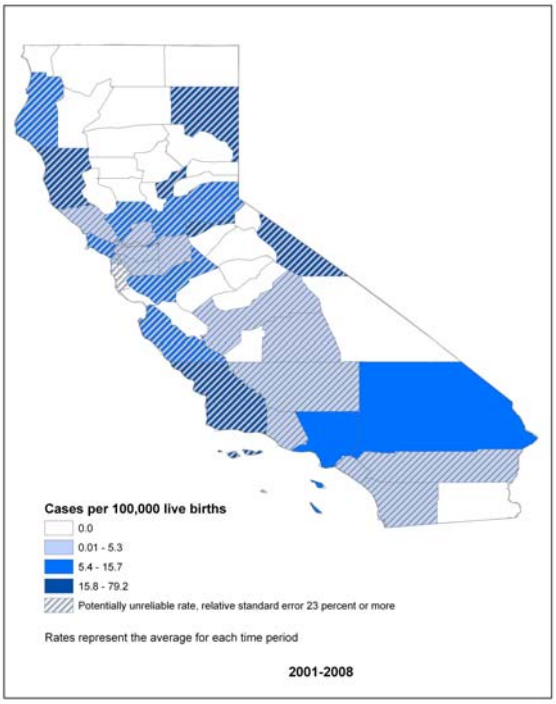
Figure 2. California county-specific infant botulism incidence rates 2001 - 2008