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Botulism Associated with Commercially Canned Chili Sauce — Texas and Indiana, July 2007

On July 7 and July 11, 2007, public health officials in Texas and Indiana, respectively, reported to CDC four suspected cases of foodborne botulism, two in each state. Investigations conducted by state and local health departments revealed that all four patients had eaten brands of Castleberry's hot dog chili sauce before illness began. Botulinum toxin type A was detected in the serum of one Indiana patient and in a leftover chili mixture obtained from his home. CDC informed the Food and Drug Administration (FDA) of the apparent link between illness and consumption of the chili sauce. On July 18, FDA issued a consumer advisory, and the manufacturer, Castleberry's Food Company (Augusta, Georgia), subsequently recalled the implicated brand and several other products produced in the same set of retorts (commercial-scale pressure cookers for processing canned foods) at the same canning facility. Examination of the canning facility in Georgia during the outbreak investigation had identified deficiencies in the canning process. On July 19, the U.S. Department of Agriculture Food Safety and Inspection Service (FSIS) issued a press release that announced a recall of chili and certain meat products from the Castleberry canning facility and provided recommendations to consumers. That recall was expanded on July 21 to include additional canned products. A fifth case of botulism potentially linked to one of the recalled products is under investigation in California. This report describes the ongoing investigation by members of OutbreakNet* and others and the measures undertaken to control the outbreak, which is the first outbreak of foodborne botulism in the United States associated with a commercial canning facility in approximately 30 years. Clinicians should be vigilant for symptoms of botulism, including symmetric cranial nerve palsies, especially if accompanied by descending flaccid paralysis. Consumers should not eat any of the recalled chili sauce or other

recalled products and should carefully dispose of all recalled products. Information regarding product disposal is available at http://www.cdc.gov/botulism/botulism_faq.htm.

Case Reports

Texas. On July 7, the Texas Department of State Health Services (TDSHS) reported to CDC two suspected cases of foodborne botulism in children who are siblings. On June 29, both patients had onset of illness that progressed to include cranial nerve palsies and symmetric, descending paralysis typical of botulism. The two children initially were evaluated at two different hospitals, where multiple diagnoses were considered. After one child was transferred to the same hospital as the sibling, botulism was identified as the etiology of the shared symptoms. The two children required mechanical ventilation; botulinum antitoxin was requested on the evening of July 7, released by CDC, and administered the next morning. Patient stool and serum specimens, collected 9 days after symptom onset, were negative for botulinum toxin by mouse bioassay. Initial stool cultures did not yield *Clostridium botulinum*.

The children had shared several meals in the days before symptoms began. They had eaten Castleberry's Austex Hot Dog Chili Sauce Original for lunch on June 28. The opened can from this meal had been discarded and could not be located. However, one unopened can of this product, produced on May 7 at the Castleberry's Food Company canning facility in Georgia and purchased at the same time as the discarded can, was found in the children's home. The TDSHS laboratory tested an aliquot from this can using an enzyme-linked immunosorbent assay (ELISA) for botulinum toxin and did not detect toxin. One child remains hospitalized and is on mechanical ventilation. The second child has been removed from mechanical ventilation and begun rehabilitation.

Indiana. On July 11, the Indiana State Department of Health (ISDH) reported to CDC two suspected cases of

*A network of public health epidemiologists at the local, state, and federal levels (including employees of CDC, FDA, and FSIS) who investigate foodborne and diarrheal disease outbreaks.

foodborne botulism in a married couple. The couple had onset of symptoms on July 7. Like the Texas children, the Indiana patients initially were evaluated at two different hospitals, where multiple diagnoses were considered. On July 9, after both were admitted to the same hospital, botulism was identified as the etiology of the shared symptoms. The man and woman were hospitalized with cranial nerve palsies and symmetric, descending paralysis typical of botulism and were placed on mechanical ventilation. On July 11, CDC released botulinum antitoxin, and the antitoxin was administered to both patients. Serum samples collected on July 10 were sent to CDC's Botulism Reference Laboratory and received on July 15. On July 16, CDC detected botulinum toxin type A by mouse bioassay in the man's serum sample. Botulinum toxin also was detected by mouse bioassay in the woman's serum sample, but the sample volume was insufficient to determine the toxin type.

During the initial investigation by ISDH, food histories could not be obtained from the patients because of the severity of their illnesses. Local health officials collected several foods from the home of the patients, including an unlabeled, sealed plastic bag of leftover chili mixture from the refrigerator. On July 16, CDC detected botulinum toxin type A by mouse bioassay in the chili mixture. Empty, well-rinsed cans (with no visible signs of food debris) of Castleberry's Hot Dog Chili Sauce Original and chili made by another company were found in the couple's recycling bin. CDC re-rinsed the two cans and tested the rinse water for botulinum toxin by mouse bioassay; both were negative. The label on the Castleberry's Hot Dog Chili Sauce Original can indicated a production date of May 8 and a time of 2:23 a.m., less than 5 hours after the 9:41 p.m., May 7 production time indicated on the can collected from the Texas patients; the Indiana can had been manufactured in the same set of retorts as the Texas can. Both patients remain hospitalized and on mechanical ventilation.

On July 17, CDC OutbreakNet staff members provided information regarding the production dates and times to FDA; the evidence strongly suggested that brands of Castleberry's hot dog chili sauce were the common source of the four cases of botulism. On July 18, FDA issued a consumer advisory. On that same day, after being informed about the outbreak and findings from FDA investigation of the canning facility, Castleberry's Food Company issued a voluntary recall that included limited production dates of Castleberry's Hot Dog Chili Sauce Original, Castleberry's Austex Hot Dog Chili Sauce Original, and Kroger Hot Dog Chili Sauce. That recall was expanded on July 21 to include all production dates for 91 types of canned chili sauce, chili, other meat products, chicken products, and

dog food that were manufactured in the same set of retorts as the hot dog chili sauce at the Castleberry's Food Company facility in Georgia. These included Castleberry's brands and products produced by the manufacturer but distributed under 25 other brand names (e.g., Austex, Kroger, and Piggly Wiggly).[†]

California. On July 25, the California Department of Public Health (CDPH) reported to CDC a case of botulism caused by botulinum toxin type A with a potential link to one of the recalled products. On July 1, several days after reportedly eating a recalled chili product, the patient, a woman, had onset of symptoms that progressed to include cranial nerve palsies and bilateral generalized weakness. She was hospitalized on July 5. On July 7, CDPH released botulinum antitoxin, which was administered to the patient. Botulinum toxin type A was detected by mouse bioassay from a serum sample collected on July 7. The product had been discarded and could not be tested. The patient was hospitalized for 10 days and is now recovering at home. CDPH is continuing to investigate to determine whether the patient's illness was associated with the recalled chili product.

Canning Facility Investigation

The Castleberry's canning facility in Georgia produces both FDA- and FSIS-regulated products. The outbreak investigation by FDA and FSIS identified production deficiencies that might have permitted spores of *C. botulinum* to survive the canning process. *C. botulinum* spores are in the environment and can be present in foods that have not been properly subjected to high temperature and pressure during the canning process. Anaerobic conditions, low acidity (pH>4.6), low salt and sugar concentrations, and temperatures >39.0°F (>3.9°C) allow germination of *C. botulinum* spores and subsequent production of botulinum toxin. FDA officials tested 17 swollen cans of Castleberry's hot dog chili sauce produced on May 8 in the same set of retorts as the cans associated with the Indiana and Texas botulism cases. Sixteen of the 17 cans were positive for botulinum toxin type A by ELISA. Mouse bioassay results were consistent with ELISA findings. Castleberry's Food Company has closed its Georgia canning facility and has hired a firm to help recall products from approximately 8,500 retail outlets.

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[†] The recalled products were distributed in 49 of the 50 United States (all states except Alaska). A listing of the 91 products recalled as of July 21 is available at http://www.castleberrys.com/news_productrecall.asp.

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Editorial Note: In the United States, foodborne botulism usually is associated with home-canned foods. During 1950–2005, local and state health departments reported to CDC 405 events (i.e., single cases or outbreaks) of foodborne botulism in which an implicated food item was identified. Of these 405 events, 371 (92%) were linked to home-processed foods and 34 (8%) to commercially processed foods, including foods prepared in restaurants. Only four of the outbreaks associated with commercially processed foods (i.e., canned tuna, liver paste, vichyssoise, and beef stew) were associated with deficiencies in a commercial canning process. The last such outbreak in the United States occurred in 1974 and was associated with commercially canned beef stew (1). Although rare, any deficiency in the retort canning process is a major public health concern because of the severity of botulism and the widespread distribution of canned products.

Botulism is a nationally notifiable disease. Investigators are actively seeking additional cases that might be linked

to the current outbreak by issuing health alerts and examining reported botulism cases dating back to 2005. Clinicians should consider botulism in patients with symmetric cranial nerve palsies, especially if accompanied by descending flaccid paralysis. Suspected cases of botulism should be reported immediately to local or state public health officials, who should then call the 24-hour CDC Emergency Operations Center (770-488-7100); callers will be connected immediately with an on-call CDC botulism specialist. Health-care providers and public health officials are encouraged to inquire specifically about consumption of the recalled canned products as part of the food history of persons with suspected botulism. Additional information regarding this botulism outbreak is available at <http://www.cdc.gov/botulism/botulism.htm>. Consumers should check their homes for any of the 91 recalled products listed by Castleberry's Food Company at http://www.castleberrys.com/news_productrecall.asp. Persons with unopened cans of recalled products should dispose of the cans without opening or puncturing them, as described at http://www.cdc.gov/botulism/botulism_faq.htm.

Reference

1. Blake PA, Horwitz MA, Hopkins L, et al. Type A botulism from commercially canned beef stew. *South Med J* 1977;70:5–7.