

***Salmonella* 4,[5],12:i:- Infections Associated with Feeder Rodents**

August 2011-February 2012

St. Louis County/Multiple states

On November 8, 2011, a cluster of *Salmonella* 4,[5],12:i:- cases with isolates with indistinguishable pulsed-field gel electrophoresis (PFGE) patterns was posted on the national PulseNet web board. One

case with a PFGE pattern indistinguishable from the outbreak strain had been previously reported in Minnesota. The PFGE subtype was designated TM933 (Centers for Disease Control and Prevention [CDC] *Xba*I pattern designation: JPXX01.1071). Discussions between MDH epidemiologists and other state and local epidemiologists revealed that reptile exposure had been reported by several cases for which interviews had been completed. CDC was contacted, and an investigation was initiated. This outbreak strain also was implicated in a 2009 outbreak in the United Kingdom and a 2010 outbreak in the United States, both linked to frozen feeder rodents (i.e., rodents used to feed reptiles) from a single U.S. supplier, resulting in recalls.

Cases were identified through routine laboratory surveillance, and were defined as individuals who had culture-confirmed infection with *S. 4,[5],12:i:-* TM933 since August 29, 2011. Interviews about illness history and potential exposures, including animal contact, were conducted. Feeder rodent specimens were collected from several pet stores and tested for *Salmonella*. Traceback was attempted of sources of feeder rodents to which cases had exposure.

One case was identified in Minnesota. This case was an 8 year-old male with illness onset on September 25, 2011. He developed bloody diarrhea accompanied by cramps, vomiting, and fever of 103.7° F. Diarrhea was ongoing at the time of interview on October 9. Two pet snakes were kept in the case's home: a 4 to 5 year-old ball python measuring 4.5 feet in length, and a 1 year-old California Kingsnake, measuring 2.5 feet in length. The snakes were kept in separate terraria and were fed different types of rodents. Live small rats were fed to the python, and frozen "fuzzies" (10 to 13 day-old mice) were thawed and fed to the California Kingsnake. Both types of rodents were purchased from a pet store (pet store A) in Minnesota. According to the case's mother, the case was not directly involved in feeding the snakes or cleaning their housing. However, the cleaning was performed in a bathroom in the house.

On November 10, 2011, the family was re-contacted to determine whether testing could be performed on the snakes and any feeder rodents available in the home. The mother reported that the snakes were not available for testing because they had both died approximately two weeks previously after the furnace failed while the family was away. They had already disposed of the terraria and any remaining feeder rodents.

A representative of pet store A was contacted to determine the sources of feeder rodents sold at the Duluth store. Two different suppliers were reported for the time in question for frozen feeder rodents and live rats, respectively. This store location had not recently changed suppliers for any type of feeder rodents. Case information and contacts for the rodent suppliers were shared with CDC.

According to a report in *Morbidity and Mortality Weekly Report* (vol. 61;15:277), as of February 2, 2012, 46 *S. 4,[5],12:i:-* isolates of the outbreak PFGE subtype were identified in 22 states (including the one in Minnesota). The median patient age was 11 years (range, <1 to 69 years), and 52% were male. Of the 27 patients interviewed, six (22%) reported hospitalization, 20 (74%) reported reptile or amphibian exposures, and 15 (56%) reported feeder rodent exposure. For 12 patients who recalled the types of rodent contacted, five (42%) reported exposure to live rodents, four (33%) to frozen rodents, and three (25%) to both live and frozen rodents. Seven (58%) patients reported exposure to mice, two (17%) to rats, two (17%) to both mice and rats, and one (8%) was unsure. The outbreak strain was isolated from frozen mice specimens from two North Carolina pet stores where cases had purchased feeder rodents. CDC was unable to trace the contaminated feeder rodents to a definite source because of complex breeder and supplier networks and inadequate records. However, two breeders supplying pet stores from

which cases had purchased rodents had received mice from the company implicated in the 2009 and 2010 outbreaks.

This was an outbreak of *S. 4,[5],12:i:-* infections associated with exposure to feeder rodents. No definitive source of contaminated rodents was identified; however, a company implicated in 2009 and 2010 outbreaks associated with feeder rodents did supply some of the mice linked to cases in this outbreak. Rodent suppliers and pet stores involved in this outbreak were widely distributed, suggesting that the outbreak strain may be endemic in feeder rodents.