

***Escherichia coli* O157:H7 Infections Associated with a County Fair**

August

Freeborn County

On August 18, 2011, the Minnesota Department of Health (MDH) Public Health Laboratory (PHL) identified two clinical *E. coli* O157:H7 isolates that were indistinguishable by pulsed-field gel electrophoresis (PFGE) by second enzyme *BlnI*, and one band different on first enzyme *XbaI* (MDH two-enzyme pattern designation MN66ECB348 and MN31ECB348). Illness onset dates were August

8 and August 10. Routine surveillance interviews revealed that both cases had attended the Freeborn County Fair prior to illness onset. An investigation was started immediately.

All *E. coli* O157:H7 cases in Minnesota are routinely interviewed about potential exposures, including animal contact and foods consumed at home and at restaurants, as part of routine surveillance. Interviews of *E. coli* O157:H7 cases with isolates that are indistinguishable or very similar by PFGE are compared to identify potential common exposures. Information gathered during routine interviews is reviewed by an MDH epidemiologist.

An MDH epidemiologist and veterinarian visited the Freeborn County Fairgrounds on August 24 to talk to staff about the fair and collect animal and environmental samples. These samples were tested for Shiga toxin-producing *E. coli* (STEC).

Only the two original cases were identified; both were one-year-old males. Both cases had bloody diarrhea. One case had cramps and vomiting. The other case had a fever. Duration of illness for one case was 6 days, while the other case had not recovered at the time of interview. The incubation period was 6 days for one case; the other case attended the fair on August 3 and August 5, resulting in an incubation period of 3 or 5 days. Both cases had exposure to the petting zoo and the 4-H animal barns. One case remained in the stroller while in the petting zoo and had no direct contact with any animals there. The other case had direct contact with goats, sheep, kittens, and baby chicks while in the petting zoo. The one case had direct contact with a goat while in the 4-H animal barn while the other case had direct contact with a sheep in the animal barn. Both reported washing hands after visiting the barns.

The Freeborn County Fair was held from August 2-7 at the Freeborn County Fairgrounds. The 4-H barn was a large pole shed that temporarily housed sheep and goats that were exhibited during the fair. Handwashing signs were posted and alcohol dispensers were located at some of the exits; however, neither was readily visible. Handwashing stations were posted outside the front doors, but were not plumbed and relied on foot pumps to supply the water. The petting zoo was in a separate building that was dedicated to the petting zoo only. It consisted of a mixture of permanent and temporary pens, and animals were provided by volunteers. Handwashing stations were located outside the front doors but were not plumbed.

Both buildings had been roughly cleaned at the time of the site visit on August 24. A total of 20 environmental samples were taken from multiple locations in the 4-H barn and petting zoo building. One sample was positive for *E. coli* O157:H7 but the isolate was >6 bands different from the outbreak strain by PFGE. Messages were left for the four volunteers who brought animals to the petting zoo. Only one responded, and fecal samples from four sheep that were displayed were tested for STEC. Multiple STECs were detected in two sheep including three *E. coli* O157:H7 isolates but all isolates were >6 bands different from the outbreak strain by PFGE.

The fair manager and the petting zoo superintendent were provided a copy of the *Compendium of Measures to Prevent Diseases Associated with Animals in Public Settings, 2011* and educational signs. Detailed recommendations to prevent zoonotic disease transmission at the fair were discussed.

This was an outbreak of *E. coli* O157:H7 infections associated with the Freeborn County Fair. Both cases had multiple interactions with sheep and goats, which are known carriers of *E. coli* O157:H7. While the outbreak strain was not detected in any of the environmental or animal samples, multiple

strains of STEC were detected, indicating the opportunity for exposure. All attendees to fairs where animal contact is possible should be educated about the risk of acquiring illness from animals, and measures to prevent such illnesses. Fair boards should ensure that adequate handwashing facilities are easily accessible and visible.