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Health Alert

Shiga toxin-producing *Escherichia coli* (STEC) Infections Potentially Associated with Exposure to Farm Animal Exhibits at the San Diego County Fair: Update and Recommendations for the Fair Season

July 5, 2019

Key Messages

- Shiga toxin-producing *Escherichia coli* (STEC) infections have been identified in seven children (four with confirmed STEC O157) who had recently attended the San Diego County Fair; all seven had visited areas where farm animals were exhibited. The County Fair is now over, and the animal areas are being cleaned and disinfected.
- Farm animals, especially ruminants such as cattle, goats, and sheep, can be asymptomatic reservoirs of STEC.
- As summer fairs are ongoing:
 - Fair attendees should wash their hands after visiting animal exhibits
 - Healthcare providers should be aware of STEC infection in patients who recently visited farm animals exhibits and report suspect cases promptly to local public health
 - Local health departments should: 1) enhance surveillance for STEC infections associated with farm animals, 2) remind healthcare providers, especially Urgent Care providers, to consider and to ask about fair attendance and animal contact in individuals presenting with symptoms

This California Health Alert Network (CAHAN) notification is a follow-up to the one issued on July 1, 2019 and provides updates on the investigation as well as additional recommendations for local health departments, healthcare providers, and the public

Current Situation

As of July 5, 2019, seven children with confirmed or probable Shiga toxin-producing *Escherichia coli* (STEC) infection have been reported to the San Diego County Epidemiology Program; all seven had attended the San Diego County Fair at the Del Mar Fairgrounds prior to illness onset. The children range in age from 2 to 13 years old, and illness onset dates ranged from June 8 through 29. Two patients have been hospitalized with hemolytic uremic syndrome (HUS); one patient has subsequently died. All reported cases to date are residents of San Diego County.



The case-patients are from different families and no commonalities other than fair attendance have been identified. There were no common foods consumed among the patients while at the fair, but all reported visiting at least one of three barns where farm animals were exhibited. Public health officials closed the livestock barn and petting zoo to the public through the end of the fair. Investigation has included testing of animals and the three barn areas where the animals were kept; results are pending. The fair closed on July 4.

The San Diego County Fair opened on May 31, 2019 on the Del Mar Fairgrounds: <https://sdfair.com/>. It is a very popular venue and typically draws over 1.5 million visitors, mostly from San Diego County, but possibly from other jurisdictions as well.

Background

Gastroenteritis due to STEC O157 is characterized by abdominal cramps, diarrhea, and hemorrhagic colitis. The most severe clinical manifestation of STEC infection is HUS, defined as a combination of hemolytic anemia, renal failure, and often a low platelet count. HUS complicates 2-15% of STEC O157 infections; children under 5 years of age are at highest risk. The typical incubation period for STEC O157 is 2-5 days (range, 1-8 days). The risk for HUS is highest in children, occurring in approximately 15% of children younger than 5 years with STEC O157 infection.

Supportive care, including hydration, and close monitoring for the development of HUS is the appropriate management for Shiga toxin-producing *E. coli*. Antibiotics are generally not beneficial in patients with *E. coli* O157, and taking antibiotics may increase the risk of HUS. Antimotility agents may also increase the risk of systemic symptoms.

Epidemiology

STEC is most often transmitted through the ingestion of undercooked food derived from infected animals or food contaminated by feces of an infected animal or person. Cattle may be asymptomatic but colonized with STEC and serve as the main reservoir for STEC. STEC has also been isolated from other animals, including deer, sheep, pigs, and goats. STEC has been documented to survive in the environment for months. Every year, illnesses and outbreaks due to STEC O157 and other pathogens linked to visiting animal exhibits at county fairs and similar venues are reported to public health authorities. From 2010-2015, about 100 outbreaks of illness in people due to STEC and other pathogens linked to animals in public settings like zoos, fairs, and educational farms were reported to public health officials.

Diagnosis

Most STEC O157 isolates can be identified accurately in the clinical laboratory because of their ability to grow in selective media. Clinical laboratories are increasingly adopting culture-independent diagnostic tests or CIDTs, which is the detection of antigen or nucleic acid sequences of the pathogen without culture isolation. These tests may indicate the presence of Shiga toxin or Shiga toxin genes, or the presence of STEC or *E. coli* O157. While CIDT allows for timely diagnosis, culture and isolation of the pathogen is still needed for appropriate public health response. Title 17 of the California Code of Regulations requires clinical laboratories to submit STEC isolates and Shiga toxin-positive specimens or enrichment broths to a public health laboratory as soon as possible for confirmation, isolation, and additional characterization.

Updated: Recommendations for Local Health Departments

- Reach out to healthcare providers, especially Urgent Care providers, to remind them to have heightened awareness for possible STEC cases linked to animal exposures at fairs, and to ask about fair attendance in individuals presenting with symptoms
- Ask about contact with animals at fairs, shows, petting zoos, and other animal exhibits, especially for STEC cases. Contact the CDPH Infectious Diseases Branch if you identify clusters of STEC or other infections associated with any animal exhibit.
- For patients with confirmed or probable STEC O157 infection with illness onset since June 1, 2019 and a history of travel to San Diego County, please ask about attendance at the San Diego County Fair in Del Mar, especially whether the patient visited the animal exhibit areas. Please contact the CDPH Infectious Diseases Branch at 510-620-3434 if any patients are identified.
- Forward STEC O157 isolates to CDPH Microbial Diseases Laboratory for molecular strain typing.
- Reach out to fairs occurring in your jurisdiction to ensure that staff are educated on and animal exhibits are well-designed and equipped to (e.g., hand-washing stations, signage, etc.) prevent disease transmission.
- Continue to educate the public about the need for handwashing and other precautions when visiting farm animal exhibits at county fairs and other venues (see resources below)
- For detailed guidance on the public health management of STEC in California, see: <https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/IDBGuidanceforCALHJsSTEC.pdf>

Updated: Recommendations for Healthcare Providers

- It is not uncommon for patients to present multiple times to their healthcare provider before the diagnosis of STEC is considered. A high index of suspicion is critical to confirm the diagnosis and prevent complications and further illnesses.
- Consider STEC infection in patients presenting with bloody diarrhea, and order a stool culture or CIDT with reflex culture if positive. Be sure to ask about animal exposures and fair attendance.
- Do not treat STEC (including STEC O157) gastroenteritis with antibiotics or antimotility agents, but do ensure adequate hydration and monitor for the development of HUS, especially in young children.
- All infections with Shiga toxin-producing organisms and HUS are immediately reportable to local public health.

Updated: Recommendations for the Public:

Every year, many people become ill after contact with animals at animal exhibits, such as petting zoos. Therefore, it is important to follow these prevention steps when visiting animal exhibits (see [CDC's Stay Healthy at Animal Exhibits](#) for complete list):

Wash your hands

- Find where the handwashing stations are located.
- Wash your hands right after touching animals or anything in the areas where they live, roam, or eat.
- Wash your hands when you leave animal areas, even if you didn't touch the animals; hands should still be washed if you wore gloves.
- Running water and soap are best, but if they are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol and wash your hands with soap and running water as soon as you can.

Keep food and animals separate

- Don't eat or drink around animals, and keep food and drinks away from animal areas.
- Don't share your food with the animals, even if you think the food is part of the animal's regular diet. Animals should eat the food provided for them by the animal exhibit.

Keep children safe around animals

- **Always** supervise children around animals.
- Leave items such as strollers, pacifiers, cups, or toys outside the exhibit.
- Don't let children place their mouths on animals or put any objects such as thumbs, fingers, or objects (like pacifiers) in their mouths when they're around animals or in an animal area.
- Always wash children's hands thoroughly with soap and water right after touching, feeding, or caring for animals or cleaning their habitats. Adults should supervise handwashing for young children.
- Don't let children sit or play on the ground in animal areas.

Resources

- Centers for Disease Control and Prevention, E. coli webpage:
<https://www.cdc.gov/ecoli/index.html>
- CDC's Stay Healthy at Animal Exhibits webpage at:
https://www.cdc.gov/healthypets/specific-groups/stay-healthy-animal-exhibits.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fhealthypets%2Fspecific-groups%2Fcontact-animals-public-settings.html
- California Department of Public Health fact sheet:
https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/STECF_actSheet.pdf