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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

July 1, 2019

#### Key Messages

- Shiga toxin-producing *Escherichia coli* (STEC) infections have been identified in four children (two with confirmed STEC O157) who recently attended the San Diego County Fair: all four had visited the livestock barn where farm animals were exhibited. The livestock barn is now closed to the public.
- 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 potentially associated with exposure to farm animals exhibits and report suspect cases promptly to local public health, and local health departments should enhance surveillance for STEC infections associated with farm animal exposure.

#### Current Situation

As of July 1, 2019, four children with confirmed or probable Shiga toxin-producing *Escherichia coli* (STEC) infection have been reported to the San Diego County Epidemiology Program. All four had attended the San Diego County Fair at the Del Mar Fairgrounds 2-4 days before the onset of illness. The children range in age from 2 to 13 years old, and illness onset dates ranged from June 10 through 19. All patients had Shiga toxin; two have confirmed STEC O157 infections, while the other two are pending organism identification. One of the four patients was hospitalized with hemolytic uremic syndrome (HUS) and subsequently died.

The case-patients are from different families and have no commonalities between them except for fair attendance. There were no common foods consumed among the patients while at the fair, but all reported visiting the Chevrolet Livestock Barn where farm animals were exhibited and a petting zoo was located. On June 28, the San Diego County Health and Human Services Agency coordinated with fair officials to close the livestock barn and its petting zoo and restrict the public from animal contacts through the fair closing on July 4. Public health investigations are ongoing.



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 expected to have more than 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*. Generally, antibiotics are 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, illness 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.

## **Recommendations for Local Health Departments**

- 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 Livestock Barn or the petting zoo.
- Forward STEC O157 isolates to CDPH Microbial Diseases Laboratory for molecular strain typing.

- Continue educating 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>

### **Recommendations for Healthcare Providers**

- Consider STEC infection in patients presenting with bloody diarrhea, and order a stool culture or CIDT with reflex culture if positive.
- 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.

### **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 put their thumbs, fingers, or objects (like pacifiers) in their mouths when they're around animals or in an animal area.
- 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](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/STECFactSheet.pdf>