

Health Update:

Update: Shiga Toxin-Producing *Escherichia coli* (STEC) Cases in Central Missouri

April 13, 2012

This document will be updated as new information becomes available. The current version can always be viewed at <http://www.health.mo.gov>

The Missouri Department of Health & Senior Services (DHSS) is now using 4 types of documents to provide important information to medical and public health professionals, and to other interested persons:

Health Alerts convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

Health Advisories provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

Health Guidances contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

Health Updates provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance; unlikely to require immediate action.

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SUBJECT: Update: Shiga Toxin-Producing *Escherichia coli* (STEC) Cases in Central Missouri

On April 5, 2012, the Missouri Department of Health and Senior Services (DHSS) issued a Health Advisory entitled “Shiga Toxin-Producing *Escherichia coli* (STEC) Cases in Central Missouri” (<http://health.mo.gov/emergencies/ert/alertsadvories/pdf/advisory4512.pdf>). This Health Update provides additional information on the situation.

DHSS is continuing to investigate an increase in cases of Shiga toxin-producing *Escherichia coli* (STEC) in Central Missouri during late March and early April, 2012. Thirteen cases of *E. coli* O157:H7 have been identified with onset of illness during this time period. Seven of the thirteen cases have matching pulsed-field gel electrophoresis (PFGE) patterns; three cases have pending PFGE results, which are expected next week. Of the seven cases with matching PFGE patterns, five have reported consumption of raw dairy products from the same farm. In addition, one of the cases for whom PFGE results are pending also reported raw dairy consumption from the same farm. One of the cases a two-year old child reportedly developed hemolytic uremic syndrome (HUS), a severe, life-threatening condition that may result in permanent kidney damage in some of those who survive. It was previously reported that a seventeen month-old child also had HUS, but this case has been found to have a different PFGE pattern.

There are three additional symptomatic cases under investigation for whom laboratory results are pending, or not available.

The investigation is ongoing and the source of infection has not been confirmed. All potential sources of exposure are being considered, but, as stated above, it is known that six cases have consumed unpasteurized milk and/or raw milk products from the same farm before onset of their illness. Missouri law specifically allows a farmer to sell raw milk or cream in Missouri, either at the farm where it originated, or after being delivered to the customer for that individual’s own use.

DHSS recommends that any person who has signs or symptoms of STEC infection should seek medical care. Health care providers should determine if testing for STEC infection is warranted.

Symptoms of STEC infection include severe stomach cramps, diarrhea (which is often bloody), and vomiting. If there is fever, it usually is not very high. Most patients' symptoms improve within 5–7 days, but some patients go on to develop HUS, usually about a week after the diarrhea starts. The classic triad of findings in HUS is acute renal damage, microangiopathic hemolytic anemia, and thrombocytopenia.

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Use of antibiotics in patients with suspected STEC infection is not recommended until complete diagnostic testing can be performed and STEC infection is ruled out. Some studies have shown that administering antibiotics to patients with STEC infection might increase their risk of developing HUS. However, clinical decision making must be tailored to each individual patient. There may be indications for antibiotics in patients with severe intestinal inflammation if perforation is of concern.

Guidelines to optimize detection and characterization of STEC infections include the following:

- All stools submitted for testing from patients with acute community-acquired diarrhea should be cultured for STEC O157:H7. These stools should be simultaneously assayed for non-O157 STEC with a test that detects the Shiga toxins or the genes encoding these toxins.
- Clinical laboratories should report and send *E. coli* O157:H7 isolates and Shiga toxin-positive samples to the Missouri State Public Health Laboratory (MSPHL) as soon as possible for additional characterization.
- Specimens or enrichment broths in which Shiga toxin or STEC are detected, but from which O157:H7 STEC isolates are not recovered should be forwarded as soon as possible to MSPHL so that non-O157:H7 STEC can be isolated.
- It is often difficult to isolate STEC in stool by the time a patient presents with HUS. Immunomagnetic separation (IMS) has been shown to increase recovery of STEC from HUS patients. For any patient with HUS without a culture-confirmed STEC infection, stool can be sent to the Centers for Disease Control and Prevention (CDC) through MSPHL. In addition, serum can be sent to CDC through MSPHL for serologic testing for common STEC serogroups.

The benefits of adhering to the recommended testing strategy include early diagnosis, improved patient outcome, and detection of all STEC serotypes.

DHSS reminds all residents:

- Be aware of the risks of drinking raw (unpasteurized) milk or eating products made from raw milk.
- Read the label. Make sure the milk you consume is pasteurized. If the word “pasteurized” does not appear on a product label, it may contain raw milk.

Medical providers are required to report, within one day, suspected or diagnosed cases of the following: Shiga toxin-producing *E. coli* (STEC), other Shiga toxin-positive organisms that have not been characterized, and all cases of post-diarrheal HUS. Reports can be made to the local public health agency, or to DHSS at 800/392-0272 (24/7). In addition, laboratories are required to submit isolates or specimens positive for *E. coli* O157:H7, or for other Shiga toxin-positive organisms, to MSPHL for epidemiological and confirmation purposes.

Laboratory consultation is available from MSPHL by calling 573/751-3334, or 800/392-0272 (24/7). Other questions should be directed to DHSS' Bureau of Communicable Disease Control and Prevention at 573/751-6268, or 800/392-0272 (24/7).

Additional information on raw milk:

Raw milk is milk from cows, sheep, or goats that has not been pasteurized to kill harmful bacteria. Consumption of raw milk purchased from local farms has gained some popularity in recent years. Awareness of the fact that raw milk and raw dairy products may carry many types of disease-causing bacteria is very important.

Drinking raw (unpasteurized) milk, or eating products made from raw milk, such as cream, soft cheeses, yogurt, or ice cream, can be dangerous because raw milk can be contaminated with harmful bacteria, such as *Campylobacter*, *Escherichia coli*, enterotoxigenic *Staphylococcus aureus*, *Listeria*, *Salmonella*, *Yersinia*, *Mycobacterium*, *Coxiella*, and *Brucella*. If raw milk is contaminated with *E. coli* and is consumed, a person can develop hemolytic uremic syndrome (HUS). Small children are especially susceptible to HUS. Pregnant women run a serious risk of becoming ill if they drink raw milk contaminated with *Listeria*. *Listeria* can cause miscarriage, fetal death or illness, or death of a newborn. Pregnant women should not drink raw milk. Overall, from 1998 through 2008, **86 outbreaks** due to consumption of raw milk or raw milk products were reported nationally to the Centers for Disease Control and Prevention (CDC). These resulted in 1,676 illnesses, 191 hospitalizations, and 2 deaths. Because not all cases of foodborne illness are recognized and reported, the actual number of illnesses associated with raw milk likely is greater.

According to CDC, the following groups should always avoid raw milk and raw milk products:

- Pregnant women or women considering pregnancy,
- Children under 5 years of age,
- The elderly,
- Persons infected with HIV,
- Persons with cancer, and
- Anyone who is immunocompromised (such as persons with organ transplants).

Common misconceptions about raw milk:

- Raw milk has health benefits: there is no proof in the scientific literature that raw milk offers additional health benefits.
- Raw milk is more nutritious than pasteurized milk: the major nutrients in milk are not affected by pasteurization.
- Raw milk has natural properties that kill harmful bacteria if ingested: raw milk can actually grow harmful bacteria.
- Pasteurizing milk causes lactose intolerance and allergic reactions: both raw milk and pasteurized milk can cause allergic reactions in people sensitive to milk proteins.