



Oklahoma State
Department of Health

Oklahoma State Department of Health

Epidemiological Investigation of Restaurant-Associated
Escherichia coli O111:NM Outbreak--Mayes County,
Oklahoma, 2008

FINAL REPORT

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Final Report: Epidemiological Investigation of Restaurant-Associated *Escherichia coli* O111:NM Outbreak-- Mayes County, Oklahoma, 2008

EXECUTIVE SUMMARY

This report is presented as a summary of the public health response and investigation of what is believed to be the largest *E. coli* O111 outbreak in the United States to date. The outbreak occurred in northeastern Oklahoma during late August and early September 2008. Within 48 hours of public health notification of increased cases of bloody diarrhea being admitted to Tulsa area hospitals, a restaurant was identified as the common source of transmission and closing the restaurant contained the outbreak. The complex investigation involved extensive case finding (including laboratory testing of numerous clinical specimens from exposed persons) and restaurant patron and employee interviews, coupled with an in-depth environmental investigation that consisted of restaurant, food, water, and animal feces specimen testing. A total of 6,481 hours have been dedicated to this investigation by the Oklahoma State Department of Health thus far.

The findings of the epidemiologic investigation indicate:

- 1) This was a point source outbreak originating from the Country Cottage restaurant in Locust Grove, Oklahoma.
- 2) Because the outbreak organism was not isolated from any environmental specimen, it could not be conclusively determined how *E. coli* O111 was introduced into the restaurant.
- 3) The exact mode of spread within the restaurant was not established, however, the epidemiological analyses suggests there was ongoing foodborne transmission of *E. coli* O111:NM to Country Cottage restaurant patrons between August 15 and August 24, 2008.

Enterohemorrhagic *E. coli* can cause serious illness and pathology because of its ability to produce potent cytotoxins called Shiga toxins 1 and 2. Persons who ingest Shiga toxin-producing *E. coli* (STEC) may have a diarrheal illness ranging from very mild and non-bloody to severe with very bloody stools. Cattle and other ruminant animals such as sheep, goats, and deer are considered the primary reservoir of STEC bacteria. The infectious dose is very small and STEC are often spread by ingesting food items contaminated with ruminant feces that are not subsequently cooked. Person-to-person transmission, direct animal contact, and waterborne transmission, either from contaminated drinking water or recreational water, are other exposure routes.

OUTBREAK FACTS

| | |
|--|-----------------------------------|
| Source of Outbreak | Country Cottage Restaurant |
| Organism | <i>E. coli</i> O111:NM |
| Confirmed Outbreak Period | August 15, 2008 – August 24, 2008 |
| Total Number of Cases | 341 |
| Total Number Hospitalized | 70 |
| Total Number of Deaths | 1 |
| Introduction into Restaurant | Unknown |
| Spread of the Organism within the Restaurant | Foodborne transmission likely |

September 10, 2008

Kim Rayno, MPH

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Shiga-like Toxin Verification List - Northeastern Oklahoma Gastrointestinal Outbreak

Please review the attached list and verify, correct, or add additional names to the list and fax it back to my attention. Thanks, Kim

